



Addis Ababa University
Faculty of Medicine, School of Public Health

**Assessment of the extent and determinants of functionality of health extension workers in
East Gojjam Zone, Amharra Regional State, Ethiopia.**

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Public Health**

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SCHOOL OF GRADUATE STUDIES

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Declaration

I, the undersigned, declare that this is my original work and has not been presented in this or any other university and all sources of materials used for this thesis have been duly acknowledged.

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Abbreviations

Adj.mOR	Adjusted matched odds ratio
AIDS	Acquired Immunodeficiency Syndrome
ART	Antiretroviral therapy
CBHW	Community Based Health Workers
CE	Continuing Education
CHA(s)	Community Health Agent(s)
CHW(s)	Community Health Workers
CI	Confidence interval
DNHC	Distance from the nearest health center
ENA	Essential Nutrition Action
ETB	Ethiopian Birr
Fig	Figure
FP	Family planning
HC	Health Center
HEP	Health Extension Program
HEW(s)	Health Extension Worker(s)
HI	Health Institution
HIS	Health Institution Support
HIV	Human Immunodeficiency Virus
HP	Health Post
HRH	Human resource for health
HSAs	Health Surveillance Assistants
HSDP	Health Service Development Program
HSEP	Health Service Extension Program
HTP	Harmful traditional health practice
ICT	Information communication technology
ID	Identification number
ITN	Insecticide treated net
MCH	Maternal and Child Health

MDGs	Millennium Development Goals
MOH	Ministry of Health
mOR	Matched Odds Ratio
NGOs	Non Governmental Organizations
ORS	Oral Rehydration Salt
PMTCT	Prevention of Mother to Child Transmission
RDT	Rapid diagnostic test
SES	Socio economic status
SPSS	Statistical Package for Social Science
TB	Tuberculosis
TTBA	Trained Traditional Birth Attendants
TVETI	Technical and Vocational Education and Training Institute
UNICEF	United Nation Children Fund
USA	United States of America
VCT	Voluntary Counseling and Testing
WHO	Woreda Health Office
	World Health organization

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Abstract

Background –Previous studies have identified factors affecting Health Service Extension Program implementation as well as working conditions of Health Extension Workers in Ethiopia. Most of the studies conducted were qualitative and none of them raised the question to what extent HEWs are functional and what are its determinants. The present matched case control study was conducted to evaluate risk factors for functionality of HEWs after a cross-sectional census survey determination of extent of HEWs functionality.

Objective- A study was undertaken to determine the extent of HEWs functionality and to evaluate determinants of functionality of HEWs in East Gojjam Zone, Amharra National Regional State.

Method- A population based matched case control study after a cross sectional preliminary census survey was conducted in East Gojjam Zone from March to May 2009. A total of 632 health extension workers were included in the cross sectional census survey. All of the (n=25) eligible cases (nonfunctional HEWs) in the zone were included in the study. Two randomly selected controls [(n=50) (functional HEWs)] working from 2003 to 2008 in the same zone from which the cases were enrolled were matched for each case for age, service year, marital status and woreda of the case. Data collection instruments of separately designed self administered and interview based structured questionnaire were used for the cross sectional and matched case control studies respectively

Result- Over all non functional prevalence of HEWS in East Gojjam Zone was 4 % (n=25) The final multivariable model identified health institution support (adjusted matched odds ratio [Adj.mOR=40, 95% CI=4.5_360]), selection pattern [Adj.mOR=11.2, 95% CI=1.3_98.9], and Future aspiration,[Adj.mOR=2.1 95% CI=1.3_57], as independent determinants of functionality of HEWs after adjusting for other variables in the model.

Conclusion- In general functionality of HEWs was found to be encouraging. The majority (96% n=607) were functional where as 4 % (n=25) were non-functional. HEWs are doing better the family health, personal hygiene and environmental sanitation and health education services but communicable disease prevention and control service needs more effort. Health institution support, selection pattern and future aspiration had been identified as independent determinants of HEWs functionality. The program need to employ many qualified HRH for training, supervision and support. Therefore, the real cost of scaling up HEP, including the additional qualified HRH for supervision and training, should not be neglected. Moreover the need for career structure for HEWs is a high concern.

1. Introduction

1.1. Background

One of the most important elements in any health service delivery system is the human resource for health (HRH). Developing capable, motivated and supported health workers is essential for overcoming bottlenecks to achieve national and global health goals. Hence, the need to have optimum number and professional mix of human resource for the effective coverage and quality of the intended services is unquestionable [1, 2].

The most recent World health report (2006) focuses the world's attention on human resource as the key ingredient to successful health systems functioning and it highlights the growing human resource crisis, particularly in low-income countries. There is a chronic shortage of well-trained health workers. The shortage is global, but most acutely felt in the countries that need them most [1]. A number of factors drives these shortages, mainly, the dramatic increase in demand for health workers in high-income countries. In addition, increasing morbidity, mortality and absenteeism rates; coupled with increasing workloads due to the impact of the HIV/AIDS pandemic. Moreover, inadequately funded, poorly managed, and performing health systems, which lead to deteriorating working conditions in many underserved areas, creating a strong push factor [3].

While the multifaceted crisis must be addressed through multiple measures, one strategy identified by both the Joint learning Initiative (JLI, 2004) and the World health report (WHO, 2006) is so-called "task-shifting". It is a review and subsequent delegation of tasks to the "lowest" category that can perform them successfully. It is in the context of task shifting that the concept of using community members to render certain basic health services to their communities has gained currency again [1, 4]

It was disclosed that, currently, there are a number of countries with a workforce density below which high coverage of essential interventions, including those necessary to meet the health-related Millennium Development Goals (MDGs), is very unlikely. Based on the World Health Organization (WHO) estimates, in 2006, 57 countries including Ethiopia left with critical shortage of HRH. The density of health workers to population is much lower than the average for Sub-Saharan Africa. Based on the WHO report, the minimum required density of medical doctors (MD), Nurses and Midwives to achieve the MDGs in Africa has been estimated at 2.5 per 1000 population [1]. By the year 2005, Ethiopia had a HRH density of 0.2 per 1000 population. This clearly indicated the extent of the shortage and the challenges ahead [5].

Ethiopia being one of the countries that signed the MDGs has almost 11 years of implementing Health Service Development Program (HSDP). Despite implementing the program, the evaluation made at the end of HSDP-I by the MOH (2002), had showed the failure of reaching the grass-root level with essential health services. In response to this, the Ethiopian government has launched Health Service Extension Program (HSEP) by the year 2002/3. To implement the program nationally, emphasis has been placed on training of Health Extension Workers (HEWs), with the target of staffing health posts (HPs) per Keble by two female HEWs. Thus, it was planned to trainee and deploy 30,000 HEWs, nationally, by the year 2009. About 50% of the planned number was already trained and deployed by the end of June 2007[6, 7, 8].

1.2. Statement of the problem

The need to have health personnel, who take care of people health, with different qualification ranging from specialist doctors to lower level auxiliaries was an established and globally experienced fact. It was also clear that the required qualification of the health personnel vary from time-to-time and place-to place. However, using auxiliaries to substitute for or assist doctors has been a controversial issue between those who say that this is loss of quality care and those who try to balance health care expansion with the available resource [2]. Despite the controversy, the use of auxiliaries was identified as one of the key strategies to address the growing shortage of health workers particularly in low-income countries [3].

However, to have their effective contribution, they must be carefully selected, appropriately trained and – very importantly – adequately and continuously supported. Large-scale Community Health Worker (CHW) systems require substantial increases in support for training, management, supervision and logistics [3, 9].

In Ethiopia, the genesis of the new cadres (HEWs) is believed to have major contribution. It will address, partly, the low potential health service coverage (72% by the year 2005) and, particularly, the critical shortage of HRH (0.2 per 1000 population by the year 2005). Though HEWs are assigned at the community level, unlike the other CHWs, they are under the structure of Ministry of Health (MOH). They are government-employed workers, with a minimum monthly salary of 381 ETB, as stipulated by MOH (By the year 2002/3) [5]. Therefore, it was expected that they would have a better government support. Consequently, Lack of remunerating, which was one of the major factors for the CHWs inadequate function, is addressed by this approach.

The HEWs had been an imminent solution for the failure of essential health service to reach at the grass-root level. Focusing on preventive health care services, they are responsible to devote 75% of their working time for the outreach activities. In this regard, it was believed that they will, substantially, contribute to reduce the high burden of communicable diseases that account for 80% of the health problem in the country [8]. Hence, placing HEWs at community level is a commendable undertaking. Despite this fact, full-filing favorable working condition of the HEWs including training them adequately is an important challenge, which may be compounded by long distance travel, poor transportation and communication facilities [10].

A questionnaire survey and an in-depth interview of all the training centers reflected that the entire Technical and Vocational Education and Training Institutes (TVET) studied lacked adequate facilities; including classrooms and library information and communication technology (ICT). Trainees did not have adequate orientation on their future job at recruitment. Moreover, the recruitment of HEWs was reportedly flawed. Most of the HEWs were recruited from woreda

towns and not the rural villages they will be working. The study concurrently, showed challenges in harmonizing the staffing pattern at HP level, guiding time use, working schedule and relationship with the community. No clear guidelines on relationship with other health workers at the community level, on career structure, transfer and leave of absence [11].

Although the pilot implementation, which was conducted in five regions by 2002/03, had showed encouraging results in terms of communities' acceptance and demand for the services provided by the program, it had been mentioned that the HEWs had deficiency in their practical skills [7, 8, 12]. Another cross-sectional study about the HEWs access to information, continuing education (CE) and reference materials showed the requirement of better planning and coordination [13]. Despite the fact that having such challenges, currently, nothing is known to what extent HEWs are functioning and little is known about the determinants of their function.

In light of this, this study tried to describe situations with respect to functionality of HEWs who had been trained and deployed up to 2008 and elucidated the determinants of their functionality. In East Gojjam Zone covered by this study, 818 HEWs were trained and deployed. The 618 of 818 HEWs were trained before 2005 and the rest trained in 2006 and 2007[14]. By comparing the functional ones with the non- functional ones and by analyzing the attributes of each group, it was attempted to elucidate the main determinant factors of HEWs functionality. This could help to provide an insight to the subsequent efforts needed to solve factors, negatively, affecting their function and to ensure functional HEWs in East Gojjam Zone.

2. Literature review

The use of health practitioners with different degrees of skills is not a new practice. Using community members to render certain basic health services to the communities they come from is a concept that has been around for at least 50 years [3]. The adoption of CHWs as frontline outreach workers has emerged in response to the need for effective risk reduction interventions that are more accessible to underserved populations who often are at elevated risk, particularly, when traditional outreach efforts have failed. At the heart of each health system, the work force is central to advancing health. There should be optimum number and professional mix of human resources for the effective coverage and quality of the intended services [1, 15, 16].

Since the launch of the Alma-Ata conference in 1978 the goal of "health for all by the year 2000", health service delivery programs promoting the primary health care approach using CHWs have been established in many developing countries. These programs are expected to improve the cost-effectiveness of health care systems by reaching large numbers of previously underserved people with high-impact basic services at low cost [17].

The CHWs are lay members of communities who work either for pay or as volunteers in association with the local health care system in both urban and rural environments. They usually share ethnicity, language, socioeconomic status and life experiences with the community members they serve. They have been identified by many titles (nearly 36). Some of them are community health advisors, lay health advocates, promoters, outreach educators, community health representatives, peer health promoters, and peer health educators [15].

2.1 Selection of CHWs

Many literatures disclosed that the criteria for selection of CHWs throughout the world vary, but most include maturity as evidenced by age, sex, literacy and residence in the community. It was also described that a preference for the selection of the male sex usually arises from the nature of the work, which may need much travel in Costa Rica and Venezuela. However, in Botswana and Solomon Islands, females were preferred (especially married ones) since they were less likely to move away from the community [2]. While there are some broad trends,

CHWs can be men or women, young or old, literate or illiterate. More important is an acknowledgement that the definition of CHWs must respond to local societal and cultural norms and customs to ensure community acceptance and ownership. For CHWs to be able to make an effective contribution, they must be at least carefully selected [3, 18].

As it was mentioned in literatures, a minimum level of elementary education is needed in most countries. Some also recruit illiterates like in Colombia and Khavar project in India. Some evidences suggested that the involvement of local health staff and full community participation in the candidates' selection decreased the dropout rate [2].

2.2 Education and training

In United States, employers hiring CHWs have been looking for individuals with some formal education, specific qualities, and certain skills. About half of employers had educational or training requirements for CHW positions. About 21% mentioned that at least a high school diploma was expected. A bachelor's degree was a prerequisite to employ the CHWs in 32% of the organizations. Most of the employers require post-hire trained CHW personnel. About 68% need to employ trained CHWs through continuing education, 32% with classroom instruction, 47% through mentoring and 43% on-site technical assistance. The required length of training was ranged from nine to 100 hours [15].

Though the period of training of CHWs varies from place to place, many developing countries have community-based health workers comparable to Ethiopia's HEWs who receive just one-year's basic training [19]. It was disclosed that the shortage of qualified and adequate trainers has been noted everywhere [2].

2.3 Core roles, competencies, and qualities of CHWs

While in some cases, CHWs perform a wide range of different tasks that can be preventive, curative and/or developmental, in other cases, CHWs are appointed for very specific interventions [3, 18]. The study conducted to determine inequities of using CHWs for timely and appropriate treatment of malaria in southeast Nigeria had shown that socioeconomic status

(SES) influenced the valuation of benefits. The use of CHWs had improved overall geographic but not socioeconomic equity to the drugs [20]. A cross-sectional study of evaluation of a CHW programme in Siaya district, Kenya, showed CHWs commonly made errors in managing childhood illness [21]. A randomized trial of effect of a Bicultural CHW on completion of diabetes education in a Hispanic population had showed that of the patients having CHW intervention, 80% completed the education program, compared with 47% of patients without CHW intervention ($P = 0.01$). The effect of the CHW assignment on program completion, controlling for financial status and language spoken, was extremely robust ($P = 0.007$) [9].

To generalize about experiences with CHW programmes or answer the question of what makes a good CHW programme, there is consensus on a number of issues: First, CHWs can make a valuable contribution to community development and, more specifically, can improve access to and coverage of communities with basic health services. There is robust evidence that CHWs can undertake actions that lead to improved health outcomes, especially, but not exclusively, in the field of child health.

However, although they can implement effective interventions, they do not consistently provide services likely to have substantial health impact, and the quality of services they provide is sometimes poor. Second, for CHWs to be able to make an effective contribution, they must be carefully selected, appropriately trained and – very important – adequately and continuously supported. Third, CHW programmes are therefore neither the panacea for weak health systems nor a cheap option to provide access to health care for underserved populations. Fourth, by their very nature CHW programmes are vulnerable unless they are driven, owned by and firmly embedded in communities themselves. One of the most important features of CHW programs is that they strengthen the already existing community network ties. CHWs are uniquely qualified as connectors because they live in the communities in which they work, understand what is meaningful to those communities, communicate in the language of the people, and recognize and incorporate cultural buffers (e.g., cultural identity, spiritual coping, traditional health practices) to help community members cope with stress and promote health outcomes[3, 18].

2.4-Issues and activities

The health issues, for which CHWs most frequently involved, were women's health and nutrition (46 and 48 %, respectively). Followed by child health and antenatal care (41 % each), immunization (37 %) and reproductive health care (34 %) [15]. A comment posted by Paul Chinnock - Editorial team, about “improving TB detection rates in Ethiopia” disclosed that the effectiveness of CHWs has sometimes been questioned and they have often suffered from pressure from ‘vertical’ health programmes, each of which expects the workers to focus on activities relevant to their particular programme. Moreover, the editorial team suggested one activity in which their work can produce benefits for the communities they serve [19]. Numerous programmes have failed in the past because of unrealistic expectations, poor planning and an underestimation of the effort and input required to make them work. This has unnecessarily undermined and damaged the credibility of the CHW concept [3, 18].

2.5-Supervision, refresher course, supplies and/or logistics of HEWs

The study, which was conducted about the influences of CHWs in Ethiopia, identified that the most common barriers to CHWs productivity to be the lack of supplies, lack of supervisory support, skill limitations and low levels of community trust [22]. Particularly, supervision and other forms of support, such as supplies, are widely acknowledged in the literature as crucial for the continued quality of service provision by CHWs. Despite this fact, it was known that large-scale CHW programmes have often neglected these areas, mainly, because they had overlooked their cost in the planning stage [23,24]. Only good supervision, together with adequate material support, will enable the CHWs to, adequately, function. There is a real risk that poor supervision and support will compromise the quality of the large-scale CBHW programmes. Also of crucial importance for sustaining, the quality of performance of CBHWs is continued support in terms of refresher training and regular mentoring. Several studies have shown that without refresher training, acquired skills are quickly lost [25, 26].

The HEWs in Ethiopia are in most cases supervised by the Woreda Health Offices (WHO) and sometimes also by the health centre where they are based. An assessment by the Center for National Health Development in Ethiopia of May 2006 had found that good guidelines for team supervision exist and that a lot of attention was given to the supervision of HEWs at all levels. The same study indicated that the WHO as well as the Health Centers (HC) were usually neither sufficiently staffed nor trained to provide good supervision [27].

It was disclosed that in Uganda there was well-organized network of community-based health care NGOs in the past, which variously developed criteria and trainer and facilitator manuals. However, in most other African countries, it was found that none of their programmes has the issue of refresher training received much attention in the initial planning process. Given the importance of continuing training for a sustained quality of service provision by CHWs, it was known that this might become a weakness of these CHW programmes [28].

2.6 CHWs satisfaction

A survey about the level of satisfaction of the Korean-American CHWs training had indicated that a high level of satisfaction with the overall program (average 9.3 on a 10-point scale). Particularly, with the specific aspects of the program, including the topics chosen; allocated times for questions, discussion and activities; the materials provided; the presentations by trainers and the facilities (range of item means = 4.6–4.8 on a 1–5 scale) [15].

It was described that in many instances of past CHW programmes, the professional health care workers saw the CHWs as lowly aides and failed to understand the potential value of their contribution. Thus, the relationship between CHWs and the formal health services often became strained, negatively affecting the satisfaction and performance of CHWs [27, 29, 30]. To avoid this, it was discussed in literatures that the management of CHW programmes must also pay attention to the concerns and attitudes of health professionals [30].

2.6 Career structure for CHWs

Some evidences suggested that the possibility of professional development is an important motivating factor for CHWs, possibly improving retention [23, 28]. Malawi and Ethiopia, where the Health Surveillance Assistants (HSAs) and HEWs are part of the Ministry of Health (MOH) structure, their salary is below that of the other professional health care workers. None of the CHW cadres in Uganda has so far been formally recognized by the MOH. The consequence is that they do not have structured career opportunities. The HSAs in Malawi, by contrast, have a career path. According to the Ministry, they can be promoted to the position of senior HSA; plans have been made recently to create several levels of HSAs with increased salary scales. They also have a better chance of being accepted for further studies to become environmental health officers, clinical officers or nurses [23].

Ethiopian context of CHWs:

Ethiopia has always been with critical shortage of human recourse for health (HRH). Health workers to population ration estimated to be 3 to 4 times lower than even the East Africa standards. In 2005, totally, there were 34,600 health workers in Ethiopia. Of which 2,453,776 and 18,809 were medical doctors (MD), Health Officers (HO) and nurses of all categories. In addition, there were 6368 Health Assistants (HA), 437 frontline health workers in 2001 and 17,700 HEWs by the end of 2007. There were also over 20 different types of voluntary health workers such as; Community Health Agents (CHAs), Trained Traditional Birth Attendants (TTBA), Community Based Rural Health Agents (CBRHA), Malaria Agents and Health Promoters [5].

Ethiopia had a long experience in implementing CHW programs (since 1960's), partly, in response to the critical shortage. However, maintaining the programs sustainable and obtaining their effective contribution had left an important challenge. In the past, many CHW programs had failed, mainly, due to lack of community and health institution support [2]. Thus, Ethiopia with such challenges needs to increase rapidly the number of health workers at the (rural) community level where the need is greatest [5].

In 1993 a new health policy was formulated within the framework of the overall governmental policy of good governance and decentralization. In line with the national health policy, the government has formulated a twenty-year Health Sector Development Strategy (HSDS). It will be implemented through four phases of 5-year investment program [6].

Despite the gains that were made in the implementation of HSDP-I, it became clear that basic health service had not reached to those in need. In response to this problem, the government introduced accelerated expansion of primary health care coverage and the Health Service Extension Program (HSEP) by the year 2002/3, during the second phase of HSDP [7]. These were also embedded in HSDP-III to achieve universal access to primary health care (PHC) coverage. Primarily, it was targeted to expand essential health services to the rural Ethiopia (J). According to the HSDP-III, all rural Kebeles in the country will be covered with the HSEP. The modalities for the implementation include an outreach programme run by female HEWs, two per Kebele serving 5000 people [12]. By the end of June 2007, greater than 17,700 HEWs are deployed in the rural kebeles all over the country. HEWs are responsible to carry out the 16 health extension packages under four major components. [8].

These are;

1. Diseases prevention and control- to reduce morbidity, disability and mortality

- HIV/AIDS and other STIs prevention and control
- TB prevention and control
- Malaria prevention and control
- First aid and emergency measures

2. Family health services-to strengthen and gradual expansion of family planning, maternal & child health, youth and nutrition services;

- Maternal and child health
- Family planning
- Immunization
- Adolescent reproductive health and Nutrition

3. Hygiene and environmental sanitation services;

- Safe excreta disposal
- Solid and liquid waste disposal
- Water supply and safety measures
- Food hygiene and safety measures
- Healthy home environment
- Control of insect and rodents
- Personal hygiene

4. Health Education and communication- the main objective of this component is to bring a behavioral change through intensive and continued investment of knowledge to the community [6].

A study about initial community perspectives on the HSEP in Welkait, Ethiopia, revealed that the community's basic health knowledge was still quite poor regarding the major communicable diseases and their vectors. However, participants felt the new HSEP represented an improvement on previous health provision. In addition, HEWs were preferred over Trained Traditional Birth Attendants (TTBA) for assistance with labour [31].

The research conducted in Wolayeta, had showed that services related to delivery, separation of human and animal residence and HIV/AIDS need further effort. The study, concurrently, showed that concern was very much reflected on HEWs in-service training as well as future career [30]. A research Editorial Team of Paul-chinnock, concluded that HEWs involvement in sputum collection and treatment had improved the smear-positive case detection and treatment success rate, possibly, because of an improved service access [33].

A study on the working condition of HEWs indicated that 81% were at more than 10km from the WHOs and 63% are at more than 10km from the HC. HEWs have been assigned in number of cases in Kebles with no HP. HEP implementation guideline stipulates a staffing pattern of two HEW and two guards per HP. The study on working condition, however disclosed that the actual staffing varied a lot. The same study showed that some HPs have no

supplies at all. Where there are supplies, some major items/drugs may be missing like contraceptives, antimalaria drugs (CoArtem) and Oral Rehydration Salt (ORS) in a number of HPs. It also showed that only the English version reference materials prepared by MOH are reached HP. Regarding supervision/monitoring and logistics, the study had found that emphasis was given to supervision at all levels. Fifty percent had 3 or more supervision visits in about 9 months and, on average, each HEW had 3 supervisions and most supervision are by WHO's. With respect to career structure and upgrading, the same study revealed as most HEW's aspire to upgrade in to the nursing and environmental health categories. The majority would like to upgrade to nurse (70%) and the rest to environmental health [10].

The evaluation of the programme implementation by MOH had found that the recruitment of HEW's was planned to be from the same Kebeles to allow better integration. However, in most of the cases, young women from urban and periurban centers were recruited. In addition, the training settings and instructors were overstretched particularly at the beginning. Moreover, the curriculum and the modules for HEW's training have missed some interventions that are useful for child survival and maternal health. In addition, the curriculum had more time for theory beyond the needed skill they would implement in the future, but with lesser practical skill, giving little or lesser time for practice. On the top of this, the practical training of HEW's particularly on skilled delivery and key clinical skills had deficiency [34]. Through such challenges, raising the question of functionality was important. Hence, this study tried to describe the situation of HEW's with respect to their functionality and assessed the determinants of functionality of HEW's in east Gojjam Zone.

3. Objectives

3.1. General objective

To assess the extent of functionality of HEWs and its determinants in the East Gojjam Zone, Amhara Regional State.

3.2. Specific objectives

1. . To assess the extent of functionality of HEWs trained and deployed in East Gojjam Zone up to 2008.
2. To measure the effect of health system support, the availability of logistics such as drugs, medical equipments and stationeries and closeness of health institutions on functionality of HEWs in East Gojjam Zone.
3. To measure the effect of HEWs' future aspiration (career structure) on their functionality in East Gojjam Zone.
4. To characterize the association between the recruitment pattern of HEWs and their functionality in East Gojjam Zone.

4. Methods and Materials

4.1. Study Area and population

The study was conducted in East Gojjam Zone, one of the eleven Zones in Amhara region. Debremarkose, the city of the Zone is located at a distance of 330km from the capital city of the country, Addis Abba and at 280km from the capital city of the region, Bahirdar. The Zone encompassed 18 woredas and 425 Kebeles. It covered an area of 13,809.08 square kilometers. East Gojjam Zone had an estimated total population of 2,226,877 of which 1,102,165 were males and 1,124,712 were females by the year 2008 ([Central Statistical Authority 2008](#)). There were about 340 health facilities in the Zone: two hospitals, 18 health centers and 343 completely constructed health posts. In the Zone, there were about 818 initially employed HEWs at different time starting from the year of 2003.

4.2. Study design

A cross-sectional preliminary descriptive census survey of HEWs functionality was conducted primarily and it was followed by a matched case-control analytic study. The cross-sectional survey was used to determine cumulative incidence of nonfunctional HEWs, working in East Gojjam Zone from 2003 to 2008. Thus, it helped to determine the proportions of functional and non-functional HEWs and exposure prevalence's within the study area. In addition, it assisted in digging use full information to design the subsequent matched case-control study. The cases and controls were determined after interviewing all HEWs and classifying them as to functionality. Since it dealt with point prevalent cases, it was cumulative incidence case-control study. The case-control study was conducted to analyze the determinants of functionality by comparing non-functional (cases) and functional (controls) HEWs.

4.3. Study Population

The source population was all HEWs trained and deployed in East Gojjam Zone since 2002/3 up to 2008.

Study Subjects

Cross-sectional study: All HEWs working in East Gojjam Zone were included in the study.

Case-control study: Those HEWs who were participated in the preliminary cross-sectional survey and identified as either functional or non-functional were included in the study after they were matched with respect to age, woreda, marital status, and service year.

4.4. Sample size

Cross-sectional study: The cross-sectional study was a census survey rather than sample study. Hence, sample size calculation and significant testing had not been considered strictly. Therefore, all 818 HEWs working in East Gojjam Zone were included in the study.

Case-control study: The sample size required for the case-control study was determined using sample size calculation for the number of discordant pairs (m) required to detect the minimum odds ratio, after the preliminary cross-sectional census survey. The data from the cross-sectional study was analyzed and both the odds ratio and outcome and exposure prevalence were determined. Then sample size for the matched case control study was determined based on the most prevalent exposure(refresher course) among controls with OR=6.61, 80% power, 20% type II error, and 5% type-I error as follows;

$$m = \frac{[(Z_{1-\alpha/2})^2 + Z_{1-\beta}^2 P(1-P)]}{(P-1/2)^2}$$

Where,

m= number of discordant pairs required to detect the odds of exposed for a refresher training=?

M= m/Pe= the total number of discordant pairs required to yield m discordant pairs=?

P= (OR/1+OR) = the pooled proportion estimator of the odds for a refresher training, exposed population proportion=86.9%

OR=the odds of exposure for a refresher training=6.61

Pe (p₀q₁ + p₁q₀) = the probability of exposure for a refresher training discordant pair=59.7%

P₀= the estimated proportion of controls with out refresher training=28%

P₁=the estimated proportion of cases with out refresher training = 72%

Hence;

$$m = \frac{[(Z/2) / 2 + Z \sqrt{P(1-P)}]^2}{(P-1/2)^2}$$
$$= \frac{[1.96/2 + 0.84 \sqrt{0.869 * 0.131}]^2}{(0.369)^2}$$
$$= 12$$

M=m/Pe

$$= 12/0.597$$

=20 discordant pairs (this is sample size for one to one matched case control)

For C controls per case (C+1)/2C as many cases required

$$= (2 + 1)/2 * 2 \text{ as many cases}$$

$$= 3/4 * 10$$

$$= 8$$

Since 2: 1 control: case ratio was taken; the total sample size required was 24

(8 cases, 16 controls). However all of the 25 cases (non functional HEWs) were included in the study. Hence, the total sample size was 75 (25 cases, 50 controls).

4.5. Sampling Procedure

Cross-sectional study; Since census survey was conducted no need of sampling procedure.

Case-control study: All the non functional (cases) and functional (controls) HEWs with their respective characteristics of age, marital status, service year and Woreda were listed following the cross-sectional study to have a sampling frame. All cases (non-functional HEWs) were included in the study. Subsequent to enrollment of a case, eligible control groups (functional HEWs) with in the same age, marital status, and Woreda and service year were approached until two control HEWs were individually matched to each non-functional HEW.

4.6. Measurement

4.6.1 Outcome measurement

The outcome of interest was functionality of HEWs. This was measured by using functionality score scaling technique, which was used previously by a similar study (7). Hence, it was measured by assessing the activities of HEWs and comparing this with their job descriptions and giving functionality scores. The lists of items from the job description of HEWs were given scores ranging from 0-2 in multi interval scale with a minimum of zero if the activity or an item was not performed, at all times, and maximum of two if the activity was performed regularly. The average score for an item was taken to be one if the activity was performed occasionally. Those HEWs who scored below the mean score of 25 were considered non-functional and otherwise functional. Since some of the items in the job description of HEWs were general and difficult to measure breaking down in to concrete activities was made for functionality score scaling(scoring technique was cited in Annex-I)

4.6.2 Exposure measurement

Cross-sectional study

The prevalence of exposures of functionality of HEWs such as, socio demographic characteristics, selection pattern, training adequacy, supervision, presence of Kebele health committee, job satisfaction, future aspiration, HEWs wage, refresher courses, drug supply, presence of HP and logistics supply were determined with a structured self-administered questionnaire for each HEW.

The case-control study exposure variables measurement

1. Correct selection pattern (CSP)-selected HEWs adhering to the candidate recruitment criteria stipulated by HSEP.
2. Distance from the nearest HC and woreda health office-A health posts located with in or above 10kms from the nearest HC and woreda health office.

3. Correct staffing-A health post staffed with two HEWs and two guards as stipulated in HEP implementation guideline.
4. Health institution support-proportion of the recommended items reflecting health institution support, supplied and/or given to a HEW by the woreda health institutions.
5. Drug supply-proportion of recommended drugs which are/were present in a HP in the last one month.
6. Medical equipments supply-proportion of recommended medical equipments, present in a HP during the time of interview.
7. Stationery materials supply-proportion of recommended stationery materials present in a HP with in the last one month. A list of recommended medical equipments, drugs and stationary materials to the HP was taken from the standard checklist prepared by the region and that was sent to each woreda. The information on the above exposures was gained from the HEWs through a structured questionnaire interview. Identical questionnaire was used for both the cases and the controls. (Exposure variables definition was cited in annex-II)

Inclusion criteria

All HEWs in the Zone who were working actively since 2004 to 2008, for the cross sectional survey.

Those who were participants of the prior cross sectional survey for the case control study.

Exclusion criteria

Those who were sick during the interview

Those who were not participants of the cross sectional survey

Those newly employed HEWs while the study is being conducted (HEWs employed after data collection was started)

4.7. Data Collection Procedures

Data Collection Instruments

A structured questionnaire was developed in English and translated into Amharic for the cross sectional census survey. The questionnaire was developed using the job description broken down activities of HEWs that could be measured easily or asked about to determine functionality prevalence. Other related questions were carefully designed to elicit information with regard to functionality of HEWs. The questionnaire also consisted enquires about some of the socio demographic characteristics which were felt to be important for matching for the subsequent study. It also had questions about suspected exposure variables to determine their prevalence's among controls and cases.

A separately designed structured questionnaire was used to ascertain exposures for the case control study. It was developed using questionnaires that were applied in different studies related to CHWs and HEWs and using standard checklists of drugs, stationery materials, medical equipments, and supervision and refresher course schedules recommended to a health post. This was done after review of relevant literatures and a great number of questions that can address the objectives of the study had been gathered and adapted. The questions and statements of the questionnaire were grouped and arranged according to the particular objectives that they could address. Accordingly, redundancy, vagueness, and improper logical flow aspects of the questions were corrected (the questionnaire was cited in Annex-V, VI and VII).

Data collection

The data of the preliminary cross-sectional census survey was collected in two rounds using two opportunities, respectively. The first round of data collection was carried out from February 24, 2009 to February 27, 2009. The opportunity used in this round was the training of HEWs conducted in every Woreda for three consecutive days coordinated by Woreda Health Offices and the Woreda HIV/AIDS secretariat. Nine, 10+3, clinical nursing students

were used to collect the self-administered questionnaire in about thirteen Woredas. Data were collected from 480 HEWs in the first round.

The second round was conducted from February 30, 2009 to March 30, 2009. The second round data collection was focused on the remaining five Woreda HEWs and on those Woredas with low response rate during the first round. The opportunity used during the second round was the training of all woreda health office heads and supervisors held at Debremarkose. The questionnaire coded and labeled with identification number, which was prepared for every woreda HEWs was distributed to the woreda health office heads. A list of Kebles of HEWs from which data was already obtained during the first round, was also distributed to them. The purpose of distributing the first round data source HEWs, Keble's list, was to prevent double data source. The woreda health office heads, intern distributed the questionnaires to the HEWs, announcing them to send with their monthly report. Data was then collected from about 152 HEWs during the second round.

Four trained 10+3 clinical nursing students on the other hand collected data for the cases-control study. Data collection was conducted from May 20-25, 2009. Data was collected from 75 (25 cases and 50 controls) HEWs during the case-control study.

Personnel and Data Quality Control

Data collectors were four 10 +3 nursing students for the case-control study. Training was given to data collectors by the principal investigator. One supervisor who was diploma holder in health had also been recruited and trained by the principal investigator. Pretest was done in five kebeles in West Gojjam Zone, where the actual study was not done. During the pretest, the questions frequently asked had been documented for further consideration. Both the data collectors and supervisors assessed clarity, understandability and completeness of questions. The result of the pretest was evaluated and some corrections and changes were made to the questionnaires. The supervisors and principal investigator closely followed the day-to-day data collection process. The quality of data was assured through careful design, pre-testing of

the questionnaire, proper training of the interviewers and supervisor, close supervision of the data collecting procedures and proper categorization and coding of the data.

4.8. Study Variables

Dependent variable

- Functionality of HEWs

Independent variables

- Socio demographic factors
Age, religion, sex, educational status, marital status, woreda and Service year.
- HEWs job satisfaction
- HEWs salary and per diem
- Reference and reading materials
- HP staffing
- Logistics and supplies
- Proximity to administration /supervisory teams
- Transport and communication
- Housing
- Community support
- Health facility support
- Refresher course
- Supervision
- Presence of health post
- Drug supply
- Selection pattern
- Future aspiration

4.9. Data processing and Analysis

After data collection was completed, data entry and cleaning was done by using Epi-Info version 3.3.2 and analysis of the descriptive study was done by SPSS version 13.1, where as for the matched case-control study, it was done with Epi-info version 3.3.2. During analysis, frequencies of the different variables were first determined. At bivariate level, matched analysis was made by Mc Nemars test. The association between dependent and independent variables was measured by means of matched odds ratio for which 95% confidence interval was calculated. Selected variables which showed a statistically significant association

($p < 0.05$) were analyzed at multivariate level by means of conditional logistic regression. The purpose of doing multivariate analysis was to control for potential confounding factors that were not controlled during the design.

4.10. Data quality assurance

The principal investigator and supervisor closely monitored the data collection. After data collection, each questionnaire had been coded. Variables in the questionnaire had been followed by coding, that was, with the use of the margin of the questionnaire for writing the code numbers for each variable. Random sample (10% of the data) had been reentered and print out had been visually compared with the original data. Computer frequencies were used to check for missed variables and outliers. Any errors identified at this time were corrected after revision of the original questionnaire using the code numbers.

4.11. Ethical Considerations

Ethical clearance was obtained from the institutional review board of Addis Ababa University, Faculty of Medicine, Research and Publication Committee of School of Public Health. Letter was written to East Gojjam Zone health desk and to the 18 woredas health offices to obtain their consent. The necessary explanation about the purpose of the study and about its procedures was done. Informed consent was also obtained from each respondent. Those who were unwilling to participate in the study were omitted. To ensure confidentiality, anonymous interview was conducted.

4.12. Operational definitions

- **Non-functional HEW**-If an individual HEW performed less than 50% of the activities among the job descriptions mentioned in HSEP-III.
- **Functionality; performing the activities of the job description,**
 - ✓ **Occasionally**---Doing the activity once or less in three months
 - ✓ **Regularly**-----Doing the activity at least once in a month

- **Health extension worker-** worker trained for one year predominantly about prevention, promotive health services and curative service for high impact diseases to be assigned in health post at Keble level.
- **Health post staffing-**equipping a health post with manpower of two guards and two HEWs.
- **Correctly selected HEW-** women aged 18 years or older with at least 10th grade education selected from the same or near by Keble by the selection committee.
- **Health extension program-** a defined package of basic and essential promotive, preventive and selected high impact curative health services program targeting households.

5. Results

5.1. Descriptive cross-sectional census survey part of the study

A. Sociodemographic characteristics of the HEWs

Of 818 HEWs in east Gojjam Zone, 13 left their job by themselves and data was collected from 632 HEWs. This made the dropout rate and the response rate to be 1.6% and 78.5%, respectively. The minimum and maximum ages of HEWs were 19 and 32 years old, respectively, with a range of 13 years old. The minimum and the maximum service years as a HEW were one and five years, respectively, with a range of four years. The majority (67.6%) served for about three to four years, 30.5% for less than three years and 3.3% served for about five years (Table-1).

Table -1 Socio demographic characteristics of health extension workers, east Gojjam zone, Amhara national state, Ethiopia, 2009

Variable	Frequency	Percent
Age		
19-22	291	45.9
23-25	286	45.2
26-29	51	8.1
30+	4	0.7
Religion		
Orthodox	612	96.8
Muslim	17	2.7
Protestant	3	0.5
Marital status		
Single	352	55.7
Married	247	39.1
Divorced	31	4.9
Widowed	2	0.3
Educational status		
10+1	594	94.0
12+1	32	5.1
Others	6	0.9
Distance from Woreda health office		
10km	159	25.4
>10km	467	74.6
Service year as HEW		
1- 2years	190	30.5
3-4 years	421	67.6
5 years	21	3.3

B. Items reflecting health institution support

Majority of HEWs (92.2%) responded as having a health post. The selection committee recruited most of the HEWs (76.8%). Nearly one-fourth (23.2 %) of the HEWs were selected from their current service Kebele, where as 39.5% and 37.3% were selected from the nearby Kebele and the woreda towns, respectively. About 7.9% of the HEWs claimed that they had not been supplied with any kind of the recommended drugs yet. With respect to the supply of medical equipment, 87.5% of the HEWs were supplied with at least one of the recommended medical equipment. Nearly 16% of the HEWs had responded that they were not supplied with reading and reference materials. About 88.8 % of the HEWs had responded that stationeries including registration book were available in their health post. With regard to supportive supervision, the majority (84.5%) had disclosed that they had been supervised at least at a frequency of every year and at most at a frequency of every week by a supervisor. Most (58.8%) were supervised at a frequency of every month, 21.5% of them every six month and the rest 19.7% either every week or every three month or every year. Nearly one third (29.8%) of the HEWs had not ever been given a refresher course. As to the housing is concerned, almost half of the HEWs (43.0%) were not given a living house. With regard to staffing majority (57%) had claimed that they were staffed with two HEWs and one guard, 21.5% with only two HEWs, 13.5 % with one HEW and one guard and the rest 7.5% with either two HEWs and two guards or one HEW and a junior nurse (Table-2).

Table-2 Items reflecting Health institution support for HEWs, East Gojjam Zone, Amhara National State, Ethiopia, 2009.

Variable	Frequency	Percent
Selected by		
Committee	484	76.8
I do not know	115	18.2
I forgot	31	5.0
Selected from		
Service area	146	23.2
Woreda towns	249	39.5
Near by Keble	235	37.3
Drugs supplied		
No	61	7.9
Yes	571	92.1
Medical equipments supplied		
No	79	12.5
Yes	553	87.5
Supervised		
No	98	15.5
Yes	534	84.5
Frequency of supervision		
Every month	314	58.8
Every six month	115	21.5
Other	105	19.7
Refresher course		
No	186	29.8
Yes	439	70.2
Staffing of a health post		
Two HEWs	131	21.5
One HEW and one guard	82	13.5
Two HEWs and one guard	348	57.0
Two HEWs and two guards	3	0.5
Other	46	7.5
Housing		
No	292	43.0
Yes	340	57.0

C Items reflecting community support

About 14.7% of the HEWs had mentioned that there is no health committee in their Keble. Though a health committee was present in most of the Kebles, 24.8% of the HEWs disclosed that the committee had not been involved in planning health post activities yet. Only 1.9% of the HEWs disclosed that the community did not utilize any health post services yet. Regarding the preferred health service delivery approach, 35.2% of the HEWs responded that the community (Table-3) preferred curative service.

Table-3 community participation and preferred health service delivery approach, East Gojjam zone, Amhara national state, Ethiopia, 2009.

Variable	Frequency	Percent
Presence of health committee		
No	93	14.7
Yes	539	85.3
Committee participate during planning HP activities		
No	134	24.8
Yes	405	75.2
Community participate in HP activities		
No	44	7.0
Yes	588	93.0
Ways of community participation		
Collaborate during immunization	302	51.4
Collaborate during home visit	133	22.6
Act as a model family	153	26.0
Health service delivery approach preferred by community		
Curative	220	35.2
Preventive	121	19.4
Both	284	45.4
Health post services utilization		
No	12	1.9
Yes	620	98.1
Health post service utilization by preference		
MCH	358	57.7
Environmental sanitation & personal hygiene	71	11.5
Diseases prevention and control	75	12.1
Health education	116	18.7

D. Health Extension Workers future aspiration and job satisfaction

Almost all (96.5%) had responded that they were capable of doing independently all of their work. More than half of the HEWs (53.5%) had described that they were not satisfied by what they were doing. As to the reason why they were not satisfied by what they were doing, 91 % of them had mentioned due to lack of community support, 9% due to lack of health institution support, 30.8% due to lack of supplies and 22.5% due to lack of self interest. Most (67.6%) of the HEWs were not satisfied by their profession. Among those who were not satisfied almost all (99.8%) had responded that they were not satisfied because of lack of upgrading chance and the 60%, 46%, and 35.7% of them because of insufficient salary, lack of incentives and lack of refresher course, respectively. About 88.8% of the HEWs aspired to upgrade their profession. Small proportions of HEWs, 2.2 % and 1.3% however aspired to stop any employed work and to move to the private or non-governmental organizations, respectively. Of those who aspired to stay as HEW, 69.4% claimed to stay for about a maximum of three years, 18.4% for about two years and 12.2% for less than one year. With respect to the adequacy of the one-year professional training for their current work, 32.1% responded that it was not adequate at all, 58.4 % said it was adequate partiality and the rest 9.5 % said it was adequate. Regarding with the deficiency of the one-year professional training, 58% of the HEWs responded that the training had deficiency both in theoretical and practical sessions, 39.7% said it had deficiency in practical sessions of the training and the rest 2.3 % said it had deficiency in theoretical sessions (Table-4).

Table-4 job satisfaction and future aspiration, East Gojjam Zone, Amhara National State, Ethiopia, 2009.

Variable	Frequency	Percent
Work independently		
No	22	3.5
Yes	610	96.5
Job satisfaction		
No	338	53.5
Yes	294	46.5
Future aspiration		
Stay as a health extension worker	49	7.8
Upgrading	561	88.8
Moving to private/NGO	8	1.3
Stop any employed work	14	2.2
Preferred upgrading areas		
Nursing	292	52
Environmental health technician	89	15.9
Pharmacy technician	150	26.7
Administrative positions	30	5.3

E. Functionality of health extension workers

Those HEWs who scored below the mean score of 25 were considered non-functional. Based on the scoring technique used, the majority of health extension workers (96% n=607) were found to be functional and the rest 4 % (n=25), were nonfunctional.

Reliability of internal consistency of functionality measuring instrument

The summated score ranged from a low of 12 to a high of 48. The scale mean with the 25 item was 36.74 ± 5.402 with a variance of 29.18. The minimum scale mean when an item (Family planning service) deleted was 34.81 with a variance of 27.84 and the maximum scale mean when an item (Leprosy continuation treatment) deleted was 36.69 with a variance of 28.93. The minimum value for Cronbach's alpha when an item (monitoring and evaluation of model families) deleted was 0.681 and the maximum value when an item (prevention and control of rabies) deleted was 0.709. The lower bound for the true reliability of functionality measurement instrument with the 25 items was found to be 0.701 (Table-5 and Fig-1).

Table-5 Item analysis for reliability of internal consistency of functionality measurement instrument, East Gojjam Zone, Amharra National State, Ethiopia, 2009.

	<u>N of Items</u>	<u>Mean</u>	<u>Variance</u>	<u>Std. Deviation</u>
Statistics for Scale	25	36.74	29.18	5.402
		Alpha	Standardized Item Alpha	
Reliability Coefficients for Item 25		0.701	0.732	

The 25 items (activities) used to measure functionality of HEWs were quantified based on performing the activities in time frequencies of not at all times, occasionally and regularly.

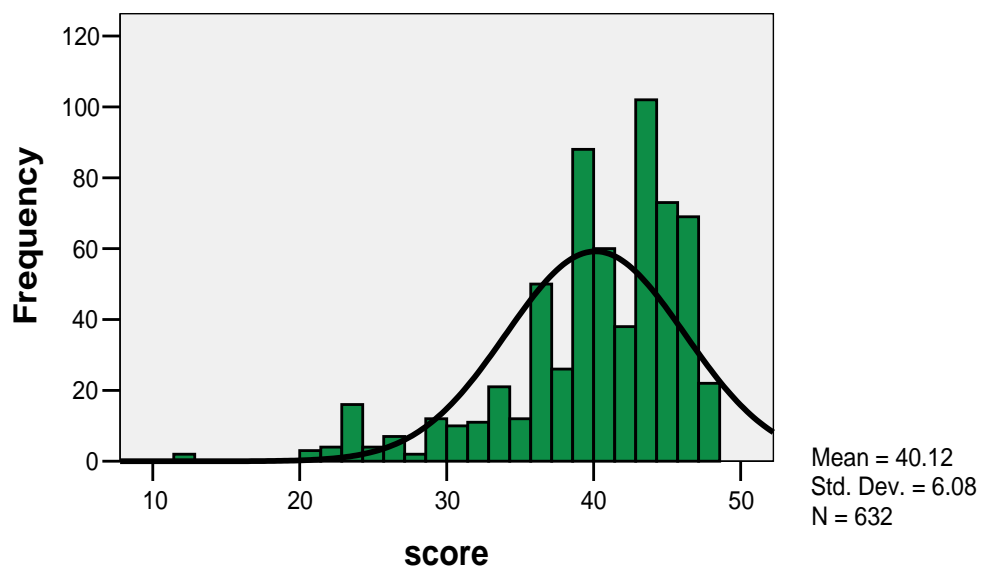


Fig-1 Frequency distribution of HEWs functionality score, East Gojjam Zone, Amhara National Regional State, Ethiopia, 2009.

Antenatal care, above three fourth (81.9%) of the HEWs responded as they provided antenatal care regularly, while 12.8% and 5.3% of them gave antenatal care occasionally and not at all times respectively. As shown in fig-2 nearly one third of the HEWs (30.9%) did not give curative treatment for diseases such as; malaria, hookworm and anemia during pregnancy. Among those who gave curative treatment for diseases during pregnancy, the majority (32.9%) gave for anemia. The rest 19.4%, 1.3% and 15.5% gave for malaria, hookworm and for both of the diseases during pregnancy respectively. (Figure-2)

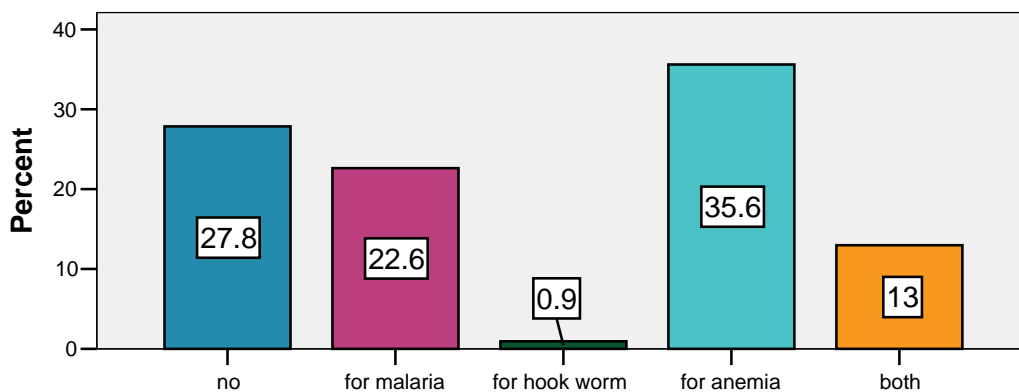


Fig-2 curative tratment given by HEWs for diseaes during pregnancy, East Gojjam Zone,Amhara National Regional State,Ethiopia,2009.

Delivery service, one of the item (activity) used to measure functionality of HEWs was delivery service. Two third (66.3%) of the health extension workers gave delivery service regularly, 12.6% gave occasionally and the rest 21.1% did not gave delivery service at all. Among those who gave delivery service, the majority (58.5%) provided both clean and safe home delivery and HP delivery services. The rest 16.0% and 4.4% gave only clean & safe home delivery and HP delivery services respectively. (Figure-3)

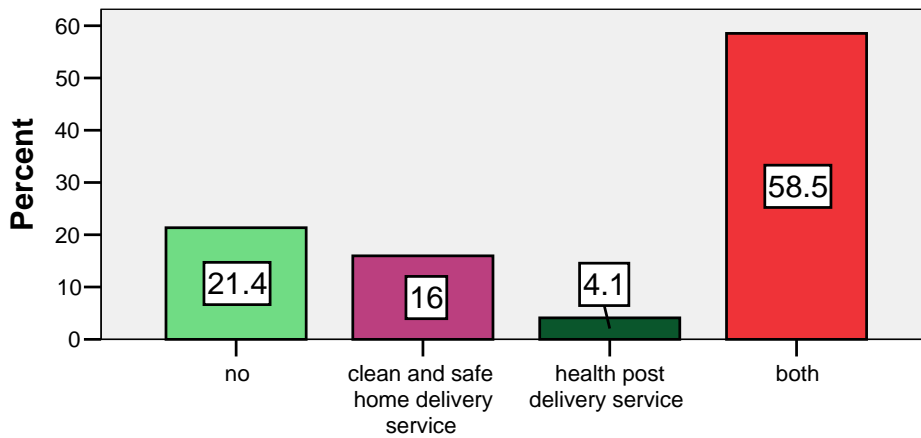


Fig-3 Delivery service provided by HEWs, East Gojjam Zone, Amhara National Regional State, Ethiopia, 2009.

Post natal care, about 89.5% of the health extension workers had responded that they gave postnatal care service regularly, and 3% did not give the service at all. Regarding postnatal counseling service, More than one third (35.6%) of the HEWs gave counseling on topics of nutrition, family planning services and treatment of anemia. About 35% of them gave postnatal counseling only about family planning. Small proportions (4.6%) did not give postnatal counseling services at all. (Figure-4)

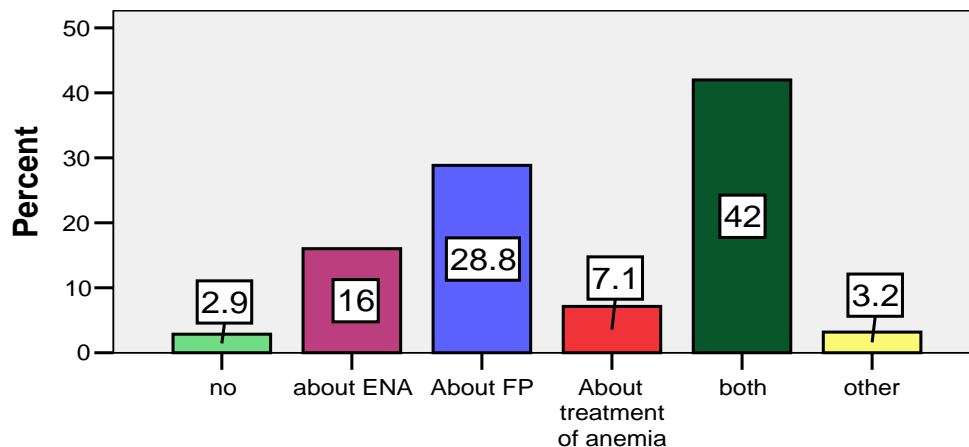


Fig-4 Post natal care counseling topics used by HEWs, East Gojjam Zone, Amhara National Regional State, Ethiopia, 2009.

Family planning service; Large proportion of HEWs (93.7%) gave family planning services regularly, whereas 4.5% and 1.8% gave occasionally and not at all times, respectively. The majority (60.9%) of the HEWs gave both condom and combined oral contraceptive methods for family planning service users. About 31.9% of the HEWs gave combined oral contraceptive

method for family planning service users. Only 2.3 % of them gave Depo-Provera for family planning service users (Figure-5).

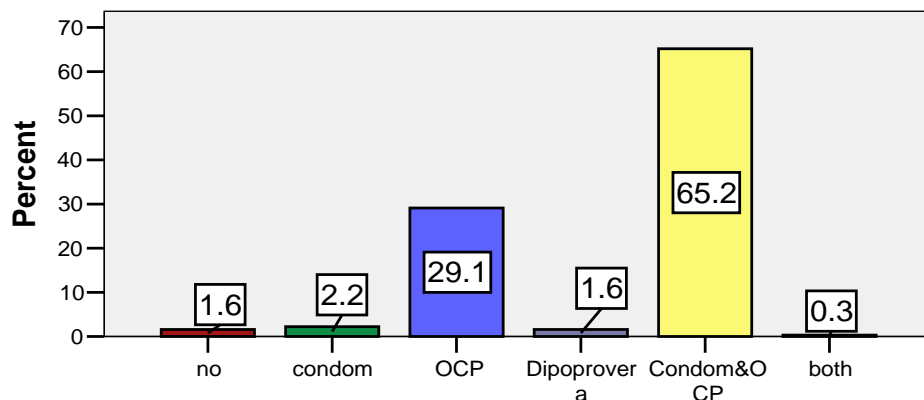


Fig-5 Family planning methods Given by HEWs,East Gojjam Zone,Amhara National Regional State,Ethiopia,2009.

Adolescent reproductive health service, nearly half (48%) of the health extension workers did not give adolescent reproductive health service at all times. However, 44.7% of the HEWs gave the service regularly and the rest 7.3% gave the service occasionally. Among those HEWs who gave adolescent reproductive health services about 26.6% did give none of counseling services on sexuality, importance of VCT, HTP and distribution of condom. The majority (65.8%) of HEWs however gave counseling on sexuality, HTP, importance of VCT and distribution of condom. Small proportions, 3.3%, 2%, 1.3% and 1% of the HEWs distributed condom only, gave counseling on HTP, counseling on sexuality and counseling on importance of VCT respectively (Figure-6).

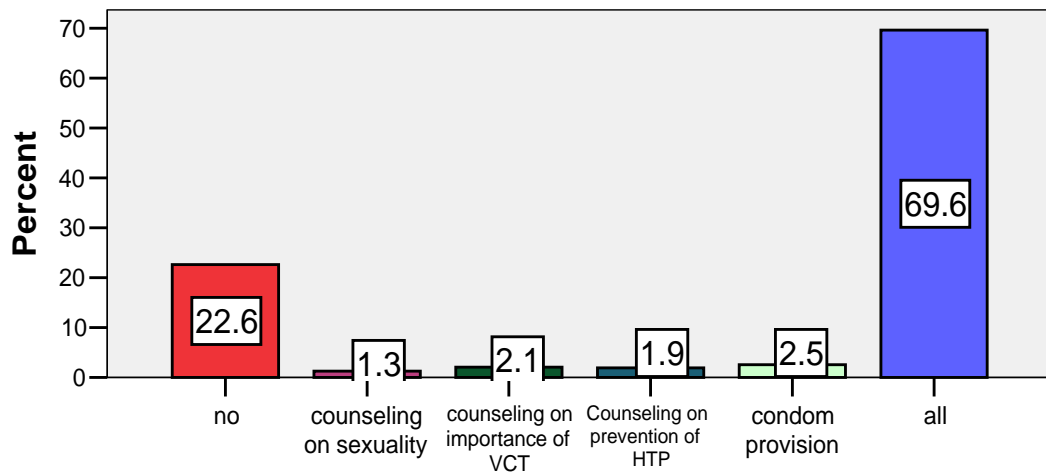


Fig-6 Adolescent reproductive health services given by HEWs, East Gojjam Zone, Amhara National Regional State, Ethiopia, 2009.

Malaria prevention and controlling service was given regularly by 87.7% of the health extension workers and occasionally by 8.1% of them. About 4.2% of the HEWs however did not give the service at any occasions. Regarding kinds of malaria prevention and controlling activities, 6.6% did not use drainage of mosquito breeding site, 17.9% did not distribute ITN, 68% did not use indoor residual spray and 29% did not detect malaria infection with rapid diagnostic test. About 25.9% of the health extension workers had been engaged with ITN distribution, indoor residual spray, drainage of mosquito breeding site and early detection of malaria infection with RDT in combination. 43.5% of the HEWs used ITN distribution, drainage of mosquito breeding site and early detection of malaria infection with RDT in combination; about 14.9 % of them used ITN distribution and drainage of mosquito breeding site in combination and 11.5% used only drainage of mosquito breeding site to provide malaria prevention and controlling services(Figure-7).

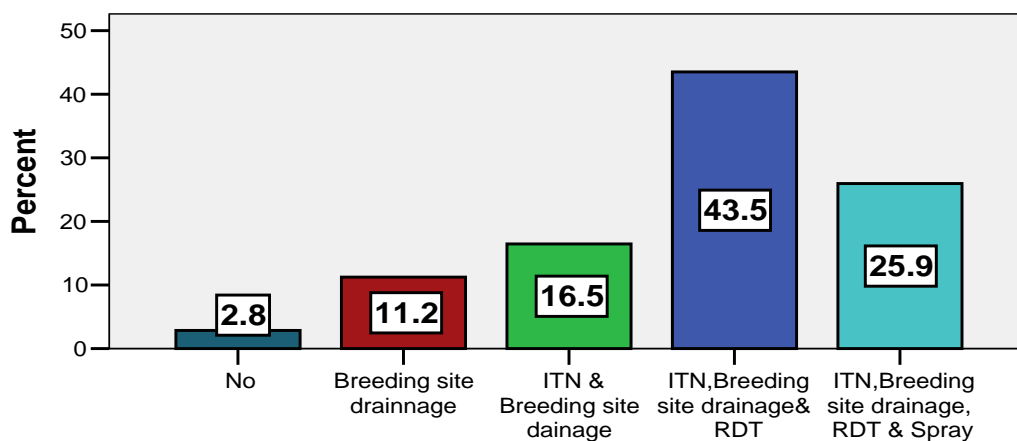


Fig-7 Malaria prevention and contolling activities used by HEWs, East Gojjam Zone, Amharra National Regional State, Ethiopia, 2009.

Leprosy continuation treatment and defaulter tracing; the activity which was not done most frequently was leprosy continuation treatment with defaulter tracing. Huge proportion (95%) of the HEWs did not perform this activity in any occasions. However, small proportions of 1.1% and 3.9% of the HEWs did the activity occasionally and regularly respectively.

Health education services; most frequently (regularly) done activity was health education followed by family planning service. Majority (94.4%) of the HEWs had responded that they were giving health education service regularly while 4.6% and 1% of them gave health education service occasionally and not at all times respectively.

Immunization service, only 2.5% of the health extension workers did not give immunization service; whereas about 91.9% gave immunization service regularly and the rest 5.6% gave occasionally.

Essential nutrition service, the majority (90.2%) of the HEWs gave essential nutrition service regularly. The rest 6.7 % and 3.1% gave nutrition service occasionally and not at all times respectively.

Growth monitoring service was given regularly by 84.9% of the health extension workers and given occasionally by 5.6 % of them. The service was not given at all times by 9.5% of the health extension workers.

Child hood illness treatment, nearly one-fifth (17.2%) of the health extension workers did not give the service at all times. Most (74.4%) of the HEWs had responded that they provided the service regularly, while the rest (8.4%) gave the service occasionally.

Monitoring cold chain system of a vaccine was done by 55.8% of the HEWs regularly, 4.9% and 39.3% of them however did occasionally and did not perform the activity at all times respectively.

Monitoring and evaluation of model families was carried out by 82.8% of the health extension workers regularly, 11.9% did not perform it at all times and 5.3 % performed the activity occasionally.

Tuberculosis continuation treatment with defaulter tracing, this was the activity performed less frequently following leprosy. The majority (92.3%) of HEWs did not perform the activity at all times. Small proportions, 1.4% and 6.3% of the HEWs however performed the activity occasionally and regularly respectively.

Prevention and control of HIV/AIDS, was performed regularly by 67.4%, occasionally by 9.5% and not at all times by 23.1% of the health extension workers. Different activities were performed by HEWs to prevent and control HIV/AIDS. Among these, home based care was given by 62.7%, promotion of male involvement in PMTCT by 66%, information and encouragement on VCT by 74.3%, promotion of ABC method by 50.3% and distribution of condom by 73.4% of the HEWs.

Prevention and control of rabies collaborating with agriculture sector was one of the recommended activities to be performed at health post level. It was used as one of the items to measure functionality of health extension workers. About three fourth (76.1%) of them did not perform the activity at all times and only 16.5% performed the activity regularly. The rest 7.4% responded as they did perform the activity occasionally.

Reporting epidemics, 75.8% of the respondents disclosed, as there was no epidemic in their Keble since their assignment to their service area, 12.6% of the health extension workers had responded that they did not report epidemics even though it occurred. The rest 11.6% of them had reported the occurrence of epidemics to the concerned bodies.

Environmental sanitation and personal hygiene service was given regularly by 94.4% of the HEWs, occasionally by 4.6%.The rest 1% of them had responded that they did not give the service in any occasions. Health extension workers gave different kinds of environmental sanitation service. Among these services: promotion of pit latrine construction was given by 94.5%, promotion of construction of solid and liquid waste disposal facilities was given by 93.1%, and promotion of personal hygiene was given by 88.8 % and building healthy house models was given by 90.8% of the health extension workers.

Curative health service was delivered regularly by about 57.2% of the health extension workers: occasionally by 9.5 %. About 33.3% of the health extension workers however did not give curative health service in any occasion.

School health service, the majority (89.5%) of the HEWs gave school health service regularly; the rest 4.6% and 6% gave the service occasionally and not at all times respectively.

Home visit, about 90.2% of the respondents had disclosed that they conducted home visit regularly, 4.2% and 5.6% conducted occasionally and did not conduct at any occasion respectively.

Illness registration, nearly one-fourth (18.9%) of the respondents did not register illnesses in any occasions. About 70.9% and 10.2% of them registered illnesses regularly and occasionally respectively.

Referring patients, the majority (81.4%) of the HEWs referred patients regularly to the near by health facility and 10.9% of them did occasionally. Only about 7.7% of them however did not refer patients in any occasions.

Sending reports, high proportion (91.2%) of the health extension workers sent reports regularly, while small proportion (4.2%) and (4.6%) of them sent reports occasionally and did not send in any occasions respectively.

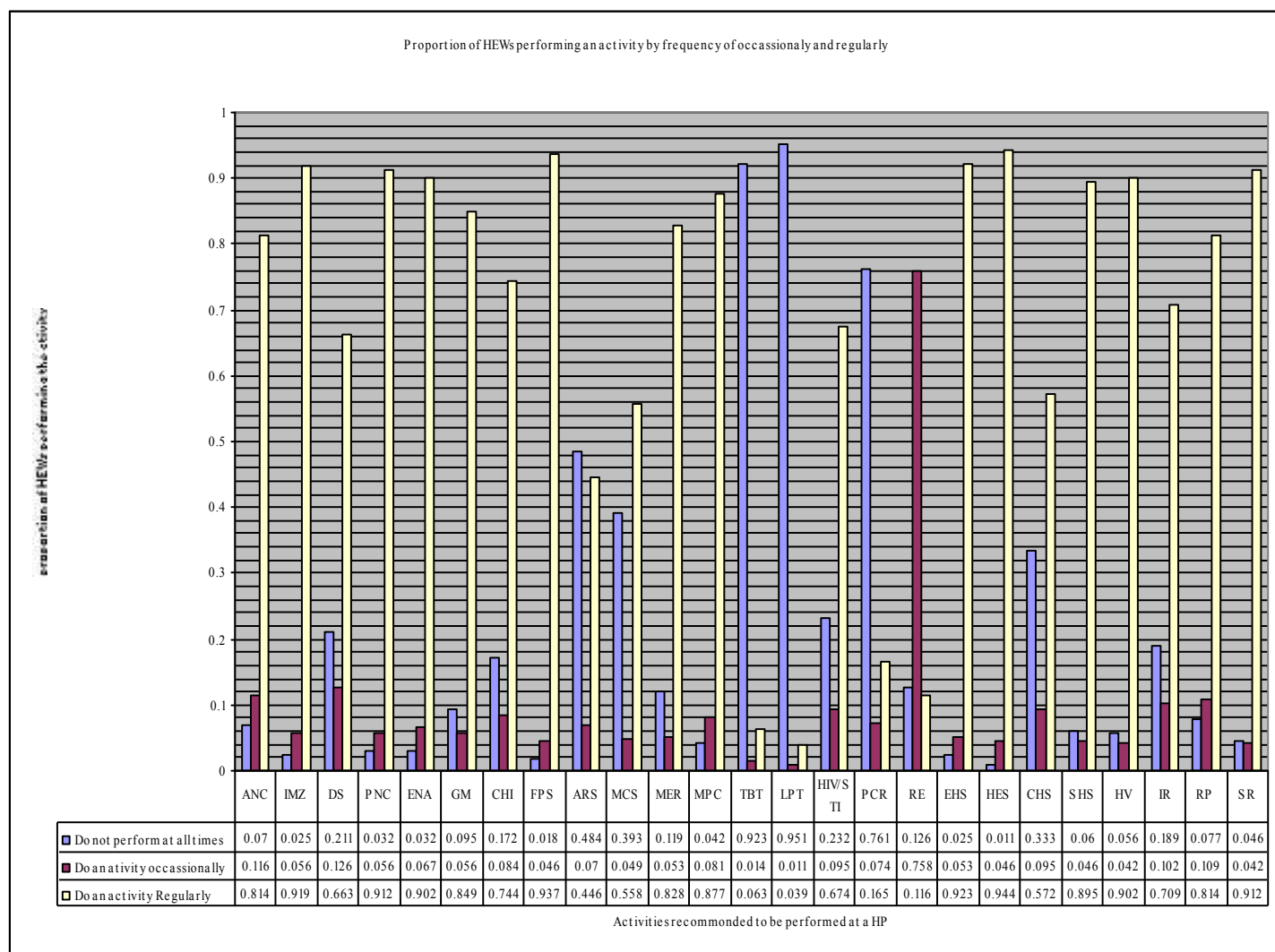


Fig-8. Regularity distribution of HEWs performing an activity, East Gojjam Zone, Amharra National Regional State, Ethiopia, 2009.

Part-II

The case- control analytic part of the study

1) Sociodemographic characteristics of the HEWs

Of 75 HEWs included in the matched case control study one third, 25 (33.3%) were non-functional (cases) and two third, 50(66.7%) were functional (controls). The mean age of the cases (non-functional HEWs) and controls (functional HEWs) was 22.72 ± 2.16 with variance of 4.667. With respect to marital status of the study groups, 28% of the cases and similar proportion of the controls were married.

2) Items reflecting health institution support of the HEWs

About 32% of the cases and 58% of the controls were staffed, correctly, based on the HSEP, implementation guideline (Annex-II). About 32% of the cases and nearly 66% of the controls had been given refresher training, at least once, after their assignment to their working Kebele. With regard to supervision, nearly, 24% of the cases and 56 % of the controls were supervised every week by the HC. In addition, 48% of the cases and 56% the controls responded that they had been supervised every month by the WHO supervisor. The majority (60 %) of the cases and (66 %) of the controls responded as having a HP (Table-6).

Table-6 Distribution of items reflecting health institution support among cases and controls, East Gojjam Zone, Amharra National Regional State, Ethiopia, 2009. (n=25 pairs)

Variables	cases	Controls			Total
		2 Exposed Controls	1 Exposed control	no exposed control	
Refresher course	yes	3(12%)	2(8%)	3(12%)	8(32%)
	No	10(40%)	5(20%)	2(8%)	17(68%)
HC supervision	yes	2 (8%)	2(8%)	2(8%)	6(24%)
	No	8(32%)	6(24%)	5(20%)	19(76%)
WHO supervision	Yes	5(20%)	3(12%)	4(16%)	12(48%)
	No	7(28%)	1(4%)	5(20%)	13(52%)
Reference materials	Yes	2(8%)	3(12%)	4(16%)	9(36%)
	No	6(24%)	3(12%)	7(28%)	16(64%)
Health post present	yes	8(32%)	4(16%)	3(12%)	15(60%)
	No	6(24%)	1(4%)	3(12%)	10(40%)
Living house given	Yes	3(12%)	0(0%)	2(8%)	5(20%)
	No	5(20%)	6(24%)	9(36%)	20(80%)
Drugs supplied	yes	2(8%)	2(8%)	3(12%)	7(28%)
	No	11(44%)	3(12%)	4(16%)	18(72%)
Med. equip. supplied	yes	1(4%)	2(8%)	4(16%)	7(28%)
	No	12(48%)	3(12%)	3(12%)	18(72%)
Stationery materials	yes	2(8%)	2(8%)	2(8%)	6(24%)
	No	11(42%)	4(16%)	4(16%)	19(76%)
Staffing pattern	Yes	4(16%)	0(0%)	4(16%)	8(32%)
	No	9(36%)	3(12%)	5(20%)	17(68%)

3) Drug supply to the HEWs

The most rarely supplied drug was found to be Ergometrine; 92% of the cases and 78% of the controls responded that it did not present in our HP. The most commonly supplied

drug was contraceptive; 96 % the cases and similar percent of the controls responded as having a contraceptive drug. (Table-7)

Table-7 Distribution of recommended drugs supplied among cases and controls, East Gojjam Zone, Amharra National Regional State, Ethiopia, 2009. (n=25 pairs)

Variables	cases	Controls			Total
		2 Exposed Controls	1 Exposed control	no exposed control	
Contraceptive	yes	22(88%)	2(8%)	0(0%)	24(96%)
	No	1 (4%)	0(0%)	0(0%)	1(4%)
ORS	yes	8 (32%)	3(12%)	1(4%)	12(44%)
	No	4(16%)	7(28%)	2(8%)	13(56%)
Vaccine	Yes	23(92%)	1(4%)	0(0%)	24(96%)
	No	1(4%)	0(0%)	0(0%)	1(4%)
Iron	Yes	0(0%)	2(8%)	3(12%)	5(20%)
	No	4(16%)	7(28%)	9(36%)	20(80%)
Antimlaria	yes	12(48%)	4(16%)	0(0%)	16(64%)
	No	7(28%)	2(8%)	0(0%)	9(36%)
Antiseptic solutions	Yes	1(4%)	3(12%)	0(0%)	4(16%)
	No	10(40%)	9(36%)	2(8%)	21(84%)
Antipain	yes	1(4%)	5(20%)	0(0%)	6(24%)
	No	9(36%)	7(28%)	3(12%)	19(76%)
Ergometrine	yes	0(0%)	1(4%)	1(4%)	2(8%)
	No	1(4%)	11(44%)	11(44%)	23(92%)

4) Medical equipment supply to the HEWs

The most commonly supplied medical equipment was syringe with needle; 92% of the cases and 98% of the controls responded as having syringe with needle. Strature on the other hand was the most rarely supplied medical equipment; 96% of the cases and 82% of the controls responded as not having a strature (Table-8).

Table-8 Distribution of recommended medical equipment supplied among cases and controls, East Gojjam Zone, Amharra National Regional State, Ethiopia, 2009. (n=25 pairs)

Variables	cases	Controls			Total
		2 Exposed Controls	1 Exposed control	no exposed control	
BP apparatus	yes	21(84%)	2(8%)	0(0%)	23(92%)
	No	1 (4%)	1(4%)	0(0%)	2(8%)
Syringe with needle	yes	22 (88%)	1(4%)	0(0%)	23(92%)
	No	2(16%)	0(28%)	0(8%)	2(8%)
Refrigerator	Yes	0(0%)	2(8%)	2(8%)	4(16%)
	No	8(16%)	10(0%)	3(0%)	21(84%)
Baby weight scale	yes	14(56%)	4(16%)	0(0%)	18(72%)
	No	7(28%)	0(0%)	0(0%)	7(28%)
Strature	yes	0(0%)	0(0%)	1(4%)	1(4%)
	No	0(0%)	9(36%)	15(60%)	24(96%)
Adult weight scale	yes	0(0%)	1(4%)	1(4%)	2(8%)
	No	6(24%)	9(36%)	8(32%)	23(92%)
First aid kites	yes	3(12%)	9(36%)	0(0%)	12(48%)
	No	6(24%)	7(28%)	0(0%)	13(52%)
Delivery kites	yes	1(4%)	2(8%)	1(4%)	4(16%)
	No	6(24%)	8(32%)	7(28%)	21(84%)
Delivery couch	yes	2(8%)	2(8%)	1(4%)	5(20%)
	No	6(24%)	9(36%)	5(20%)	20(80%)
Examination bed	yes	3(12%)	2(8%)	1(4%)	6(24%)
	No	4(16%)	9(36%)	6(24%)	19(76%)
Fetoscope	Yes	1(4%)	2(8%)	0(0%)	3(12%)
	No	4(16%)	10(40%)	8(32%)	22(88%)
Thermometer	Yes	12(48%)	5(20%)	0(0%)	17(68%)
	No	5(20%)	3(12%)	0(0%)	8(32%)

5) Stationery material supply to the HEWs

Most, 96% of the cases and 98% of the controls disclosed that registration book was present in their HP. As shown in table-9 below, the rarely supplied stationary material was marker. Only 8% of the cases and 16 % of the controls responded as having a marker (Table-9).

Table-9 Distribution of recommended stationary materials supplied among cases and Controls, East Gojjam Zone, Amharra National Regional State, Ethiopia, 2009. (n=25 pairs)

Variables	cases	Controls			Total
		2 Exposed Controls	1 Exposed control	no exposed control	
Registration book	yes	23(92%)	1(4%)	0(0%)	24(96%)
	No	1 (4%)	0(0%)	0(0%)	1(4%)
Report format	yes	1(4%)	4(8%)	1(4%)	6(24%)
	No	10(40%)	8(32%)	1(4%)	19(76%)
Pen and pencil	Yes	20(80%)	3(12%)	0(0%)	23(92%)
	No	2(8%)	0(0%)	0(0%)	2(8%)
Graph paper	Yes	0(0%)	0(8%)	2(8%)	2(8%)
	No	0(0%)	8(32%)	15(60%)	23(92%)
Marker	yes	0(0%)	0(0%)	2(8%)	2(8%)
	No	1(4%)	6(24%)	16(64%)	23(92%)
White paper	Yes	2(8%)	2(8%)	0(0%)	4(16%)
	No	10(40%)	10(40%)	1(4%)	21(84%)

6) Health institution support, Future aspiration, closeness to health

institution and selection pattern of the HEWs

About 32% of the cases and 56% of the controls responded that the health institutions had supported them. Nearly 24% of the cases and 52% of the controls had been recruited adhering to the selection criteria. About 20% of the cases and 60% of the controls aspired to stay as a HEW for about 1-3 years (Table-10).

Table-10 Distribution of selection pattern, HEWs future aspiration, health institution support and distance from health institutions among cases and controls, East Gojjam Zone, Amharra National Regional State, Ethiopia, 2009 (n=25 pairs).

Variables	cases	Controls			Total
		2 Exposed Controls	1 Exposed control	no exposed control	
HIS	yes	4(16%)	3(12%)	1(4%)	8(32%)
	No	7 (28%)	3(12%)	7(28%)	17(68%)
Selection pattern	yes	1(4%)	3(12%)	2(8%)	6(24%)
	No	5(20%)	11(44%)	3(12%)	19(76%)
Close to HC	Yes	4(16%)	6(24%)	1(4%)	11(44%)
	No	7(28%)	4(16%)	3(12%)	14(56%)
Close to WHO	Yes	3(12%)	4(16%)	1(4%)	8(32%)
	No	9(36%)	4(16%)	4(16%)	17(68%)
Stay as HEW (1-3yrs)	yes	4(16%)	1(4%)	0(0%)	5(20%)
	No	8(32%)	5(20%)	7(28%)	20(80%)

Bivariate analysis

In the bivariate analysis, I classified various hypothesized factors associated with HEWs function into five variables, health institution support for HEWs, Selection pattern, closeness to the WHO and HC and Future aspiration of HEWs. The bivariate analysis for the forms of health institution support is summarized in Table - 11. Among the forms of health institution support: refresher training, Health center supervision, drug, medical equipment and stationary material supply were associated with a HEW function [Table - 11]. A HEW recruitment was associated with her function (mOR = 0.33; 95% CI: 0.12-0.90) in this analysis [Table-12]. Closeness to the WHO and Future aspiration of staying as a HEW (1-3yrs) are associated with her function (mOR = 0.27; 95% CI: 0.09-0.78) and (mOR = 0.05; 95% CI: 0.01-0.41), respectively [Table-12].

Table-11 functionality of HEWs in relation to items reflecting health institution support, East Gojjam Zone, Amharra National Regional State, Ethiopia, 2009. (n=25 pairs)

Variables	Case exp. Control exp	Case exp. Control unexp.	Case unexp. Control exp.	Case unexp Control unexp.	mOR (95% CI)	P- Value
Refresher course*	5(20%)	3(12%)	15(60%)	2(8%)	0.32(0.12-0.85)	0.0034
HC supervision*	4(16%)	2 (8%)	14(56%)	5(20%)	0.27(0.09-0.82)	0.0035
WHO supervision	8 (32%)	4(16%)	8(32%)	5(20%)	0.73(0.28-1.89)	0.3153
Reference materials	5(20%)	4(16%)	9(36%)	7(28%)	0.74(0.3-1.9)	0.3309
Health post present	12(48%)	3(12%)	7(28%)	3(12%)	0.77(0.28-2.09)	0.3951
Living house given	3(12%)	2(8%)	11(44%)	9(36%)	0.25 (0.06-1.01)	0.0081
Drugs supplied*	4(16%)	3(12%)	14(56%)	4(16%)	0.32(0.12-0.84)	0.0027
Med. equip. supplied*	3(12%)	4(16%)	15(60%)	3 (12%)	0.73(0.15-0.89)	0.0043
Stationery materials*	4(16%)	2(8%)	15(60%)	4(16%)	0.23(0.08-0.67)	0.0005
Staffing pattern	4(16%)	4(16%)	12(48%)	5(20%)	0.38(0.14-1.04)	0.0104

* Significant at P<0.05

Table-12 functionality of HEWs in relation to their; future aspiration, selection pattern, health institution support and distance from the health institution, East Gojjam Zone, Amharra National Regional State, Ethiopia, 2009. (n=25 pairs)

Variables	Case exp. Control exp	Case exp. Control unexp.	Case unexp. Control exp.	Case unexp Control unexp.	mOR (95%CI)	P- value
HIS*	7(28.00)	1(4.00)	10(40.00)	7(28.00)	0.29(0.09-0.95)	0.0107
Selection pattern*	4(16.00)	2(8.00)	16(64.00)	3(12.00)	0.33(0.12-0.9)	0.0168
Closeness to HC	10(40.00)	1(4.00)	11(44.00)	3(12.00)	0.44(0.17-1.19)	0.0553
Closeness to WHO*	7(28.00)	1(4.00)	13(52.00)	4(16.00)	0.27(0.09-0.78)	0.0035
Future aspiration*	5(20.00)	0(0.00)	13(52.00)	7(28.00)	0.05(0.01-0.41)	<0.001

*Significant at P<0.05

Multivariate analysis

The final conditional logistic regression model included the independent effects of health institution support, selection pattern, HEW future aspiration, closeness to the WHO and some of the forms of health institution support such as drug supply and health center supervision [Table – 13 &14]. Health institution support was a risk factor for a HEW adequate function in the final model. The odds of being supported by the health institutions (WHO and / or HC) among cases were 0.73 times less than the odds among controls (Adj mOR=0.27; 95%CI: 0.08- 0.89) after controlling for the effect of other variables in the model. In addition, drug supply showed a statistically significant association with a HEW functions in the final model (adj mOR = 0.14; 95% CI: 0.03- 0.59). Cases, as compared to controls were 0.98 times less likely had aspired to stay as a HEW for 1-3 years (mOR=0.02; 95% CI: 0.001- 0.5). The odds of being selected, adhered to the selection criteria, among cases were 0.8 times less than the odds among controls(mOR=0.2;95%CI: 0.04-0.87). Similarly, cases, as compared to controls were 0.91 times less likely had been, regularly, supervised by a health center (mOR=0.09;95% CI: 0.02-0.57). Moreover, closeness to the WHO showed a statistically significant association with a HEW functions in the final model (mOR=0.06; 95% CI: 0.01-0.63). The attributable risk percent for health institution support was -24%.

Table-13 functionality of HEWs in relation to selected independent variables, East Gojjam Zone, Amharra National Regional State, Ethiopia, 2009 (n=25 pairs).

Variables	Case exp. Control exp	Case exp. Control unexp.	Case unexp. Control exp.	Case unexp Control unexp.	Adj. mOR (95% CI)	P-Value
Refresher course	5(20%)	3(12%)	15(60%)	2(8%)	0.34(0.08-1.43)	0.1432
HC supervision*	4(16%)	2 (8%)	14(56%)	5(20%)	0.09(0.02-0.57)	0.0102
Drugs supplied*	4(16%)	3(12%)	14(56%)	4(16%)	0.14(0.03-0.59)	0.0080
Med. equip. supplied	3(12%)	4(16%)	15(60%)	3 (12%)	0.76(0.21-2.69)	0.6700
Stationery materials	4(16%)	2(8%)	15(60%)	4(16%)	1.18(0.19-7.09)	0.8609
HIS*	7(28.00)	1(4.00)	10(40.00)	7(28.00)	0.27(0.08-0.89)	0.0322
Selection pattern*	4(16.00)	2(8.00)	16(64.00)	3(12.00)	0.2(0.04-0.87)	0.0319
Closeness to WHO*	7(28.00)	1(4.00)	13(52.00)	4(16.00)	0.06(0.01-0.63)	0.0190
Future aspiration*	5(20.00)	0(0.00)	13(52.00)	7(28.00)	0.02(0.001-0.5)	0.0150

* Significant at P<0.05

Table-14 Estimated parameters and covariates for a multiple regression model that relates various supporting factors for HEWs functionality, East Gojjam Zone, Amharra National Regional State, Ethiopia, 2009.

Variable	Parameter		SE ()	Z	P-value
X ₁ =HIS	1	-1.3023	0.6083	-2.1417	0.0322
X ₂ =Drug supply	2	-1.9566	0.7376	-2.6527	0.0080
X ₃ =HC supervision	3	-2.3468	0.9210	-2.5678	0.0102
X ₄ =Selection pattern	4	-1.6169	0.7535	-2.1460	0.0319
X ₅ =Closeness to WHO	5	-2.8048	1.1957	-2.3457	0.0190
X ₆ =Future aspiration	6	-3.9798	1.6429	-2.4224	0.0154

5. Discussion

Functionality of the HEWs

In this study, it was found that most (96%) of the HEWs are functional (considering functional to be those who did at least 50% of the job description) in East Gojjam Zone. Since self-administered questionnaire was used, the room for information bias was inevitable. This was evidenced by the high non-response rate (21.5%). Thus, it should be clear that the proportion of functional HEWs might be reduced if the data had been collected through trained data collectors. Thus, the reduction in the proportion of non-functional HEWs (4%) might be accounted for the high non-response rate. If those who did not return the questionnaire did it because they were non-functional, hence, the preliminary cross-sectional study might failed to determine the actual proportions of functional and non-functional HEWs in the study area. On the other hand, the self-administered questionnaire, had guaranteed for its genuinely responded findings with regard to the non-functional HEWs. Thus, based on the measurement applied, one should be dead sure that the 4 % (n=25) HEWs were really non-functional.

Despite such inconveniencies in determination of the actual prevalence of non-functional HEWs, this study relay on the 4% non-functional prevalence. This proportion should not be an undermined and neglected finding. Being the new initiative and innovative community based approach; we all hope the program to bring the intended result. However, if such proportion of HEWs had become non-functional with in their 5-year work experience, in a single Zone, it would have not been difficult to anticipate what will happen in the future, unless the appropriate measure is taken. On the top of this, of 818 initially employed HEWs, since 2003 in the Zone, 13 were left their job by themselves, making the attrition rate to be 1.6%. Both the attrition rate and the non-functional prevalence might have their own impact on the contribution obtained by implementing the program.

Previous studies had found that Although CHWs who depend on community financing have twice the attrition rate as those who receive a government salary, it was demonstrated that attrition was attributed to multiple causes in addition to inadequate pay, including family reasons, lack of community support, and upgrading of health posts. It was also disclosed that training before the age of 20 and poor selection were found to be the main factors explaining why CHWs leave their posts. Another frequently cited reason was “movement upwards to higher positions in the health system, marriage or family matters, and finding better positions in other fields” [3]. Therefore, dropout rate of HEWs might not be reduced only because they are government employed. Hence, major causes of the drop out should be investigated and appropriate measure should be taken.

In this study, an attempt has been also made to assess the determinants of functionality of the HEWs in East Gojjam Zone, through a matched case-control study design. It was carefully designed to avoid possible biases. Selection bias was minimized by including all of the cases and selecting controls randomly from the study population. Information bias on the other hand was minimized through not disclosing neither to the respondents nor to the data collectors to which group an individual respondent was assigned. Recall bias was reduced by taking almost similar groups of cases and controls and by enquiring recently faced exposures. Misclassification bias was minimized by stratifying the study subjects based on their woreda and Kebele and by using individual study subject code in the preliminary cross sectional census survey.

Services delivered by HEWs

Family health services

Encouragingly, HEWs were giving family health services regularly. The findings of preliminary cross-sectional census survey identified that MCH services; including Family Planning, Post Natal Care, Immunization and Nutrition service had been given, regularly, by the HEWs; followed by, Growth Monitoring and Antenatal care services. A cross-sectional survey

of CHW health interventions, in USA, was consistent with this study. According to the survey, the most frequently reported health issues by the CHWs were woman's health and nutrition services [15].

In this study, though it had not been carried out to the extent of other MCH activities, delivery had been attended regularly (at least once in a month) by 66% of the HEWs. In contradiction to this finding, previous studies, on working condition of HEWs and determinants of HSEP implementation, had disclosed that no delivery service was reported by HEWs and a high concern was needed for its improvement [10, 32]. Possible explanation for such contradiction could be, as their service year increases they might be trained by their nearest health center midwifery nurses or in response to the previous study's recommendation, they might be trained with courses focusing delivery services. However, this does not mean that delivery service does not require further effort, rather it does mean that comparatively from the previous study findings, it was being performed better.

Prevention and control of communicable diseases

Except malaria prevention and control service, this was performed by 87.7% of the HEWs, regularly. The most infrequently done and/or not done at all, was prevention and control of major communicable diseases. The majority of the HEWs had not performed tuberculosis and leprosy continuation treatment with defaulters tracing and prevention of rabies in any occasions. Moreover curative service for selected diseases (Intestinal parasitosis, diarrheal diseases, pneumonia of children, eye and skin infections, malaria and anemia during pregnancy) was not given at any occasion by more than one third (33.3%) of the HEWs in the study area. A possible explanation could be HEWs either did not feel competent enough to do so even if they were supplied with the necessary drugs or at other times because they might not be supplied with the necessary drugs. In addition, the one-year duty training might not have equipped HEWs with basic knowledge of the major communicable diseases. This was evidenced by the preliminary cross-sectional part of this study. In which case, the majority (90.5%) of the HEWs had disclosed that the one-year

professional training was inadequate at all or partially adequate. Of which 58% had marked that the training was deficient both in its theoretical and practical sessions.

The finding of this study was consistent with the general view that although CHWs can implement effective interventions, they do not consistently provide services likely to have substantial health impact. [3]. This was supported by a cross-sectional study of evaluation of a community health worker (CHW) programme in Siaya district, Kenya, which had showed that the CHWs commonly made errors in managing childhood illness [21]. An earlier study conducted on working conditions of HEWs had also disclosed that the demand for more/ better curative services is a challenge to the HEWs [10]. The Paul Chinnock - Editorial Team on the title of improving TB detection rate in Ethiopia had cited that the effectiveness of HEWs has sometimes been questioned and they have often suffered from pressure from 'vertical' health programmes. Finally, the team suggested as one activity in which their work can produce benefits for the communities they serve is recommended [19]. A randomized clinical trial, which was conducted in southern Ethiopia, on the other hand, had disclosed that involvement of HEWs in sputum collection and TB treatment improved smear-positive case detection and treatment success rate [33]. However, the need to train HEWs in this regard is still left the underlined task.

Under prevention and control of communicable diseases, HEWs need to provide HIV/AIDS-related services ranging from referral for voluntary counseling and testing (VCT) to home-based care for people living with HIV/AIDS [29]. However, this study disclosed as nearly one-fourth (23.1%) of the HEWs did not perform it in any occasions. It might perhaps be due to either this group of workers did not pay attention to this particular activity or might not trace the case in their Keble, particularly to run home based-care service. Moreover, they might not have enough knowledge about the activity.

Personal hygiene and environmental sanitation

This was found to be the third most frequently done activity next to health education and family health/MCH activities. The service was undertaken by 94.4% of the HEWs regularly. Most HEWs had carried out most of the activities under this major area of the service. Promotion of pit

latrine construction was carried out by 94.5%, promotion of construction of solid and liquid waste disposal facilities was performed by 93.1%, and promotion of personal hygiene was by 88.8 % and building healthy house models performed by 90.8% of the health extension workers. This was so encouraging that through which HEWs could contribute to improve the health of the rural, previously under served communities.

Health education

Health education was the most frequently/regularly done activity among HEP packages. Almost all (94.4%) of the HEWs were giving health education on different topics, regularly. Education on family health was the dominant in monthly session frequency, followed by personal hygiene and environmental sanitation. Despite this, still number of sessions per topic seemed to be inadequate to bring the expected behavioral change. The maximum session was twice per month per topic with little emphasis for major communicable diseases (TB, leprosy, malaria, HIV/AIDS and rabies). This was a consistent finding with the study conducted in the northern part of Ethiopia (Welkait), about initial community perspectives on the health service extension programme. It had disclosed that community's basic health knowledge is still quite poor regarding the major communicable diseases and their vectors [31].

Job satisfaction, training and reference/ reading materials

Job satisfaction

Even though almost all of them had responded as capable of doing independently, more than half of the health extension workers had described that they are not satisfied by what they were doing. Even if many reasons were cited for dissatisfaction, most HEWs were dissatisfied because of lack of community support. Similarly, their profession did not satisfy the majority of the HEWs. Moreover, almost all had claimed that their profession because of lack of upgrading chance dissatisfies them. This finding strongly indicates the huge urge for upgrading interest of the HEWs and the need for career structure to be a high concern.

In contradiction to this study finding, the study on working conditions of HEWs had showed that most HEWs find their work fulfilling [10]. The Korean-American CHWs satisfaction surveys also had showed a high level of satisfaction among CHWs with the overall program [15]. The possible explanation for such contradiction with these studies could be the gap in the facility systems and the timing of the studies. This study was conducted at the time in which the maximum service year experience for a HEW was five years, whereas the previous studies were conducted during the time in which the maximum service year experience for a HEW was only 6 months and the Korean-American senior participant satisfaction survey immediately after CHWs was trained. Hence, any newly employed worker might be motivated and satisfied as soon as he/she was employed but as service year increase, their motivation and satisfaction might decline due to various reasons. It was also described in literatures that since professional health care workers failed to understand the potential value of CHWs contribution, the relationship between CHWs and the formal health services often became strained [27, 29, 30]. This might negatively affect the satisfaction and performance of CHWs. If any employed worker can not be satisfied by his/her own profession and work, the possibility of high drop out rate is inevitable.

Training

This study had disclosed that the one-year professional training was inadequate at all and/or partially adequate. It was found that the training had deficiency both in theoretical and practical skills. This finding was greatly supported by the result of the over all evaluation of the program made by the MOH in 2003 which had showed that the training settings and instructors were overstretched particularly at the beginning and the curriculum and the modules for HEWs training have missed some interventions that are useful for child survival and maternal health. In addition, the curriculum had more time for theory beyond the needed skill they would implement in the future, but with lesser practical skill, giving little or lesser time for practice [34]. This had greatly indicated the necessity of continuing education and/or continuous refresher training.

In contrast to the over all training situation of HEWs in Ethiopia, the study conducted and assessed the employers' interest in United States, however, indicated that employers looking for individuals with some formal education, specific qualities, and certain skills. Most employers required post-hire training of CHW personnel through continuing education (68%) [15]. The plausible explanation for such contradiction in the training situation of CHWs between countries could be the over all situation of economic and other resource variations existed among countries. One can assume that equipping HEWs with curative skills does not simply provide health care to more people, more quickly and more cheaply, but it also gives them greater credibility in the eyes of the community. This needs to be weighed against other stakeholders' expectations and a realistic assessment of HEWs' capacity, given their training, other commitments and the size of the population they are expected to serve.

Reference and reading materials

This study had showed that reference materials of both the Amharic and English versions consisting the sixteen packages, prepared by the MOH had already reached to more than three fourth of the HEWs. However, no other reading and reference materials had reached the HPs. This was in contradiction with the finding of the study on working conditions of HEWs that disclosed only the English version reference materials prepared by MOH reached HP [10]. The variation in the findings could be explained by the gap in the studies timing, study area differences and the variation in the study designs and measurements used.

Supervision and refresher course

Supportive supervision is often identified as the vehicle through which the quality of health care services can be assured. In this regarded, it seemed that supervision received a great emphasis in the Zone. Health extension workers, in East Gojjam Zone, are more or less supported with supportive supervision, but with great variation from woreda to woreda and even Keble to Keble within a woreda. Some woredas supported HEWs with regular supervision using a standard checklist. Although there was a standard schedule for supervision and refresher

training, recommended by the region, there was hardly adherence to the standard schedule among woredas. The plausible explanation for such hardly adherence could be shortage of work force (trained supervisor) that might be compounded with financial (budget) constraint and long distance travel. Moreover, supervision is left mostly to staff (mainly nurses) in the health services. They, however, may not understand the HEWs' or their own role properly and furthermore may resent the additional task. Most importantly, however, the greatest need for supervision exists in the most remote areas, where health services are most overstretched and ill equipped.

In this study, supervision by the health center is shown to be strongly associated with function. The odds of being supervised by the health center among non-functional HEWs are 0.906 times less than the odds among functional HEWs.

In the current decentralization of health services management occurring in Ethiopia, a supervisory team drawing its members from different disciplines is established at the Federal, Regional and Woreda levels [8]. Despite the establishment, major responsibility for the supervision of facility and HEWs has been shifted to area and district levels. This might in turn overlooked the cost of providing trained supervisors and other resources needed to undertake supervisory functions at the district levels.

This study also found that refresher training is associated with the HEWs functionality. The odds of being trained with refresher training among cases are 0.78 times less than the odds among controls. Despite the quality of the initial training, it should be clear that CE or refresher training is as important as initial training. It is understood that if regular refresher training is not available, acquired skills and knowledge are quickly lost and that, on the other hand, good continuing training may be more important than who is selected. Unless HEWs are highly supported with regular refresher training, supportive supervision, and logistics supply, they tend to function sub optimally at unexpected range and be non-functional at the worst range.

A study on community health workers for ART in sub-Saharan Africa, had disclosed that the apparently insufficient attention to issues such as quality supervision and continuous training would lead to decreasing quality of the programmes over time [28]. Moreover, one study had found that most common barriers to CHWs productivity was said to be lack of supplies, lack of supervisory support, skill limitations and low levels of community trust [22].

Supplies and/ or logistics

The bivariate analysis of this study, found that health institution support in the form of drugs; stationary material and medical equipment supply are significantly associated with HEWs function. The odds of being supplied with drugs, stationary material and medical equipment among cases are 0.68, 0.77 and 0.27 times less than the odds among controls, respectively (Table-13). Hand in hand with supportive supervision go other forms of support, in particular logistics support. An issue such as the reliable provision of drug supplies and equipment was identified as another weak link in HEW function. Possible reasons could be the fact that HEWs as a rule operate on the periphery, both organizationally and geographically. Therefore, they are not only the first to lose training opportunities and supervisory visits, but also transport and drug supplies. The result is not only that they cannot do their job properly, but also that their standing in communities is undermined. Failure to meet the expectations of these populations [with regard to supplies], will destroy the image or the credibility of the HEWs.

Health institution support

The matched case control part of this study had identified that health institution support, had been significantly associated with functionality of health extension workers. The multivariate analysis (conditional logistic regression) confirm the significant association between health institution support and functionality of health extension workers ($P=0.0322$) after adjusting for other variables in the model.

If the measure of association between health institution support (HIS) and functionality of HEWs ($mOR=0.29$) assumed to reflect relative risk, and if it is assumed that 56% of all HEWs in East Gojjam Zone are supported by health institutions (frequency observed among controls); then health institution support to all HEWs in East Gojjam Zone could reduce the

incidence of non-functional HEWs by 32%. It was found to be important influential factor of optimal function for health extension workers. The important point that problems of health institution support is not peculiar to HEWs but affects all peripheral health services. It is as true for nurses and other health workers at the primary care level as they are for HEWs. This again raises the need of discussing the logistics of HEP as part of a broader need for strengthening primary level services, particularly in remote areas.

Literatures had described that, in the past, numerous programmes have failed because of unrealistic expectations, poor planning and an underestimation of the effort and input required to make them work. Therefore, large-scale CHW systems require substantial increases in support for training, management, supervision and logistics [3].

Selection pattern

In this study selection pattern was found to be an independent determinant factor for HEWs functionality. Health extension workers who were selected with out adhering to the criteria were found to have higher non-functional rates (76% among cases and 48% among controls). The high non-functional rate among those who were selected with out adhering to the criteria might be due to its effect on the HEWs permanent availability. It was established that retention is affected by central concerns with governance and management, such as community ownership and selection practices. It makes sense that retention can and should be addressed as part of a broader package of management interventions.

If the measure of association between selection pattern and functionality of HEWs (mOR=0.1981) assumed to reflect relative risk, and if it is assumed 52% of all HEWs in the study area are selected with adhering to the criteria (frequency observed among controls), then selecting

all HEW trainees adhering to the criteria would reduce non-functional HEWs in the study area by 76%. It was discussed, in the study of working conditions of HEWs that the criteria for the selection of HEWs trainees varied slightly from document to document and between regions. The same study also found, of the core criteria, only sex, female, and completion of 10th grade of general education as adhered too. Moreover, the study disclosed an important criterion, being from

the Keble of future assignment (neighboring Keble or woreda) however was not adhered to in most of the cases [10]. It was said in many literatures that by their very nature CHW programmes are vulnerable unless they are driven, owned by and firmly embedded in communities themselves. It has been also indicated that CHWs are uniquely qualified as connectors. Because they live in the communities, in which they work, understand what is meaningful to those communities, communicate in the language of the people, and recognize and incorporate cultural buffers [3]. Hence, it can be argued that selecting CHWs adhering to the criteria might increase the potential value of their contribution.

Future aspiration

Future aspiration was also found to be an independent determinant factor for HEWs functionality. A finding from the preliminary cross-sectional survey part of the study had indicated that majority (52%) of the HEWs need to upgrade to nursing and 15.1% to environmental health. This is consistent with the finding of the study on working conditions of HEWs, which disclosed that only 16% expect to stay more than three years. Accordingly, the majority would like to upgrade to a nurse (70%) and the rest to environmental health [10]. The multivariate analysis of this study had showed that the odds of aspiring to stay as HEW (1-3yrs), among those non functional health extension workers was 0.9813 less than the odds among functional HEWs. Those who aspire to upgrade soon (80% of the cases and 40% of the controls) are perhaps more prone to be preoccupied and taken by different activities such as absentees their current job, searching for other job and upgrading opportunities by themselves.

Consequently, such might predispose them to be more susceptible for non-functional compared to those who aspire to stay as HEW for 1-3years (20% of the cases and 60% of the controls). If a career structure had been formulated and announced to the HEWs, it would have been better to keep them in position waiting for the career they could get in the future. This might eliminate hopelessness and wonderers for other opportunities and might maintain them functional.

If the measure of association between future aspiration and functionality of HEWs (mOR=0.0187) assumed to reflect relative risk, and if it is assumed 40% of all HEWs in the study area are having aspiration of upgrading soon (frequency observed among controls), then formulating a career structure (eg. Possibility of upgrading after 1-3 service years to their area of upgrading interest) would reduce non-functional HEWs in the study area by 80%. Generally, it is better to have a career structure for HEWs to get their pronounced contribution with regard to improving the health status of the rural community.

A study on factors affecting implementation of HEP conducted in Wolayeta Zone also underlined the need for career structure [32]. It had been described that the HSAs in Malawi, have a career path. They can be promoted to the position of senior HSA. They also have a better chance of being accepted for further studies to become environmental health officers, clinical officers or nurses. It was also suggested that the possibility of professional development is an important motivating factor for CHWs, possibly improving retention [23, 28].

In general, the findings of this matched case control study identified that inadequate health institution support and forms of health institution support (inadequate drug supply and health center supervision), inappropriate recruitment, The HEWs future aspiration of upgrading soon (with in one year), and closeness to the WHO(10km) are risk factors for a HEW adequate function. The results in the multivariate analysis confirm the association between inadequate health institution support and a HEW adequate function that was previously reported in Ethiopia [22]. In Ethiopia, the lack of supplies, lack of supervisory support, skill limitations and adequate material support, has been reportedly the most common barriers to CHWs productivity and to

their adequate function [9]. Although the HEWs are government employed unlike the previous CHWs both are at the lowest health care delivery system, at the community level [5, 8].

Hence the need to support HEWs should not be a neglected act as too the previous CHWs. However, in line with this study, a study on HEWs working condition indicated that the WHO as well as the Health Centers (HC) were usually neither sufficiently staffed nor trained to provide good supervision [10, 27]. This might strengthen this study finding that HEWs, currently, are at elevated risk of inadequate health institution support.

Refresher training, equipment supply and stationary material supply have been identified as risk factors for the CHWs adequate function in previous studies [28, 29, 30]. However; I could only identify their association with function of HEWs at bivariate analysis and not maintain their association at multivariate analysis in this study. All of them were highly correlated with the health institution support since all those who were supplied with equipments, stationary materials and trained with refresher course were supported by the health institution. Nevertheless, I found differences in both the frequency and kinds of refresher training and logistics supplied for which a plausible explanation could be that financial constraint and shortage of human power. Those woredas with shortage of workforce and inadequate budget are less likely to adhere to the recommended schedule for refresher training and materials to be supplied, in contrast to other woredas in the Zone who may start providing the recommended support.

7. Strength and limitation

Limitation

1. The technique used to measure functionality of HEWs was taken from a similar research but was done before long time (12years) in Ethiopia about CHAs functionality.
2. Some variables like job satisfaction, professional satisfaction and training adequacy were measured with a single item question, which might reduce the level of reliability.
3. Self-administered questionnaire was used in two rounds for the preliminary census survey, which might enhance social desirability bias and the non-response rate.
4. The non-response rate for the preliminary cross-sectional study was high; this might introduce information bias and reduce the true prevalence of exposure and outcome variables.

Strength

1. Maximum effort was used to reduce likely biases in the case-control study through care full study design.
2. Possible confounders were controlled both in the study design and statistical analysis through matching and conditional logistic regression (multivariate analysis) respectively.
3. The reliability of functionality measurement tool as a whole was tested with reliability analysis and found to be acceptable.

8. Conclusion and recommendations

Conclusion

The Extent of functionality of HEWs

The over all functionality of HEWs was found to be encouraging. The majority (96% n=607) were functional where as 4 % (n=25) were non-functional. HEWs are doing better the family health, personal hygiene, environmental sanitation, health education services but communicable disease prevention and control service needs more effort. Specifically, they have limited contribution with respect to prevention of major communicable diseases such as TB, Leprosy, HIV/AIDS and Rabies.

Health system support

Health institution support was found to be independent determinant of the HEWs functionality. This study had found that there are differences among woredas, in the frequency of supervision, the kind of logistics supplied; including drugs, medical equipments, housing, and availability of a completely constructed health posts and in supporting the HEWs with refresher training. The HEWs with out health institution support tend to be non-functional at higher rate than those with health institution support. Thus, the strong need for support and training illustrates clearly that HEWs are not a simple and cheap solution to the lack of qualified HRH. The program need to employ many qualified HRH for training, supervision and support. Therefore, the real cost of scaling up HEP, including the additional qualified HRH for supervision and training, should not be neglected.

Future aspiration/Career structure

This study had found that most of the HEWs have a high need to upgrade their profession soon (Within one year). The majority had responded that their profession because of lack of upgrading chance dissatisfied them. This acute and high need to advance their profession in the absence of career structure might compromise their motivation, satisfaction and performance. Consequently, might enhance non-functionality and dropout rates of the HEWs. Thus, the need to develop a career structure for the HEWs is a high concern.

Selection pattern

Selection pattern was also found to be independent determinant of functionality of the HEWs. Despite the fact that, having the standard selection criteria for a candidate HEWs, most were selected hardly adhered to them. This might affect their permanent availability in the Kebles, where they are assigned. This might aggravate non-functionality of the HEWs. Thus selecting HEW trainees, adhering to the criteria as much as possible is crucial to prevent non-functionality and permanent unavailability of the HEWs.

Recommendations

1. The 4% non-functionality and 1.6% dropout rate of the HEWs in East Gojjam Zone should not be undermined. Therefore, the Amharra region in collaboration with the East Gojjam Zone and the respective Woredas should conduct need assessment and respond accordingly to prevent non-functionality and dropout rate of the HEWs.
2. The health institution support was found to be independent determinant of functionality of the HEWs. Therefore, the East Gojjam Zonal health desk in collaboration with the respective Woreda Health Offices should fulfill the necessary logistics and/ or supplies (recommended drugs, medical equipments and stationeries) to the HEWs and also should support with supportive supervision and refresher training
3. Since their profession because of lack of upgrading chance dissatisfied almost all of the HEWs, the federal ministry of health should have to prepare a career structure for the HEWs and announce to them as soon as possible to motivate and maintain them functional.
4. Selection pattern was identified as independent determinant of functionality of HEWs. Therefore, the respective woreda health offices should adhere to the cited criteria as much as possible while they are recruiting HEWs trainees to enhance their stability and thus their functionality.
5. Since the one year, professional training in general was found to be inadequate to function properly, the respective woreda health offices should have regular schedule for and give refresher course on all packages in general and on control and prevention of major communicable diseases and delivery services in particular.

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Annexes

Annex-I functionality scoring, multi-item (activities) used to measure functionality of health extension workers

Item (activity)	Not Performed	Performed occasionally	Performed regularly
Antenatal care	0	1	2
Immunization service	0	1	2
Delivery service	0	1	2
Post natal care	0	1	2
Essential nutrition action	0	1	2
Growth monitoring	0	1	2
Childhood illness treatment	0	1	2
Family planning	0	1	2
Adolescent reproductive health	0	1	2
Monitoring cold chain of vaccine	0	1	2
Monitoring & evaluation of model families	0	1	2
Malaria prevention & control service	0	1	2
TB prevention & control service	0	1	2
Leprosy prevention & control service	0	1	2
Prevention & control of HIV	0	1	2
Prevention & control of rabies	0	1	2
Reporting epidemics	0	1	2
Environmental health service	0	1	2
Health education service	0	1	2
Curative health services	0	1	2
School health service	0	1	2

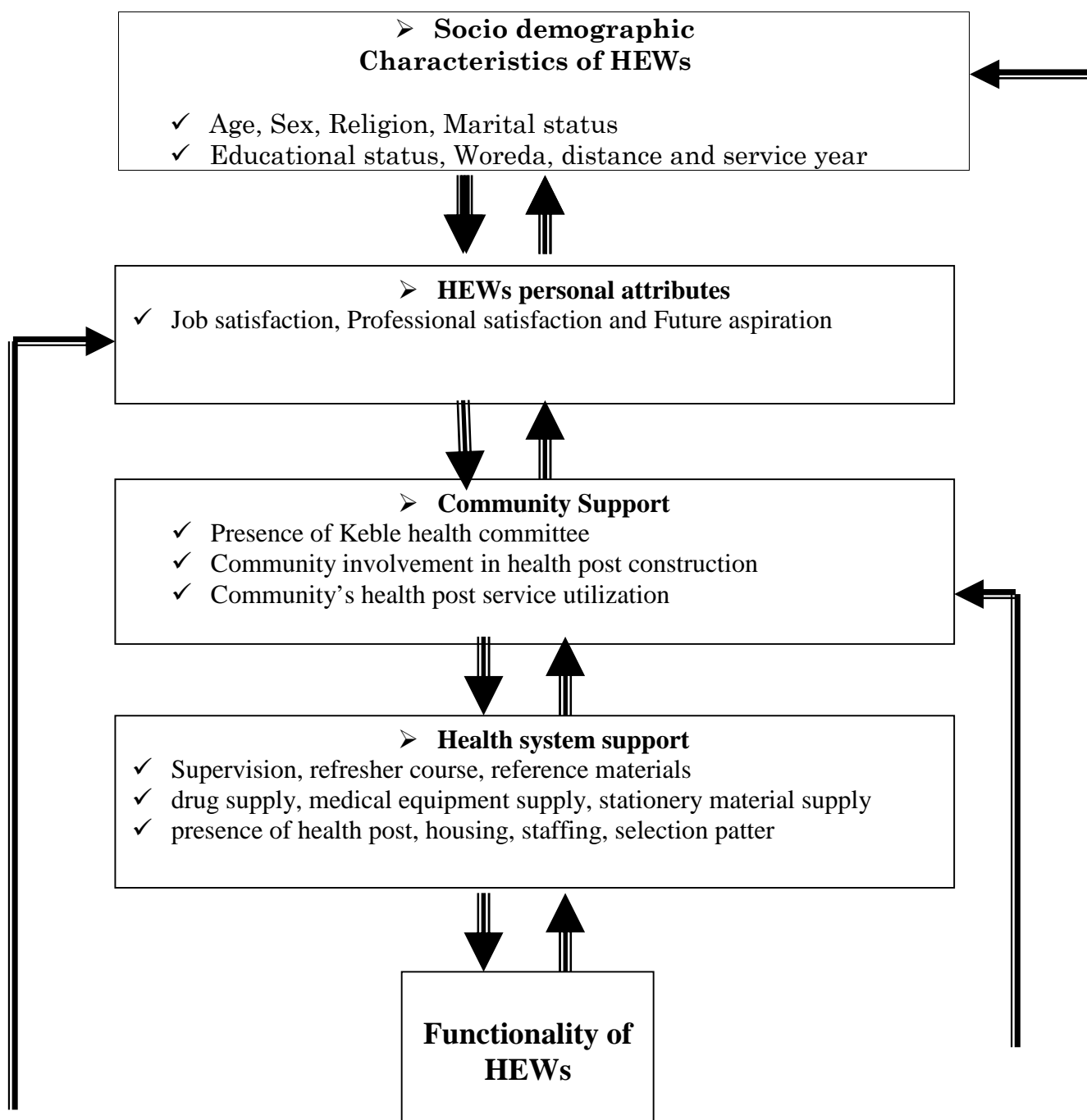
Conducting home visit	0	1	2
Registering illness	0	1	2
Referring patients	0	1	2
Sending patients	0	1	2
Total	0	25	50

Maximum score =50

Functional HEWs (controls) = those scoring 25 and above.

Non-functional HEWs (cases) =those scoring less than 25.

8.2 Annex II schematic presentation of the conceptual framework



Annex-III-Exposure variable definition.

S.no	Variable	Items used to measure the variable	Possible responses and their score		Variable definition
			Yes	No	
1	HI support	Refresher course given at least once in a year * Supervised at least once in a month by woreda supervisor team Supervised at least once in a week by health center supervisor Sixteen package reference materials supplied * Recommended drugs supplied* Recommended medical equipment supplied* Recommended Stationery materials supplied * Staffed correctly* Living house given * Completely constructed health post present*	1 1 1 1 1 1 1 1 1 1	0 0 0 0 0 0 0 0 0 0	A health extension worker is supported by the HI if at least fifty percent of the items are performed by the HI.
	Sum		10	0	Mean=5
			present	absent	
2	Drug supply	Contraceptive Oral rehydration salt Vaccine Iron sulfate Antimlaria Antipain Ergometrine Antiseptic solution (alcohol & savilon)	1 1 1 1 1 1 1 1	0 0 0 0 0 0 0 0	A health extension worker is supplied with drugs if at least fifty percent of the recommended Drugs are present in the HP with in the last one month
	sum		8	0	Mean=4
3	Medical equipment supply	Syringe with needle BP apparatus with stethoscope Refrigerator Baby weight scale Strature Adult weight scale First aid kits	1 1 1 1 1 1 1	0 0 0 0 0 0 0	A health extension worker is supplied with equipments if at least fifty percent of the recommended

S.no	Variable	Items used to measure the variable	Possible responses		Variable definition
			Yes	No	
5	Staffing	Two HEWs and Two guards	1	0	If there are two HEWs and two guards per HP correct staffing
6	Distance from the nearest HI / WHO	<=10km > 10km	1	0	Nearest if <=10km Furthest if >10km
7	Selection pattern	Selected by selection committee and Selected either from near by or current service Keble	1	0	Correct selection pattern is if the HEW selected by committee either from near by or current service Keble
		Delivery set Delivery couch Examination bed Fetoscope Thermometer	1 1 1 1 1	0 0 0 0 0	Equipments are present in the HP during the interview.
	sum		12	0	Mean=6
4	Station eries supply	Registration book Report formats Pen & pencil Graph papers Markers White paper	1 1 1 1 1 1	0 0 0 0 0 0	Similar to the above definition

Annex -IV

Questionnaire (Interview checklist / individual questionnaire)

Identification

s.no	question	answer	code	skip
001	Date of data collection	----- dd/mm/yy		
002	Questionnaire number	----- --		
003	Code of data collator	----- ----		
004	Name of the Keble	----- ----		
005	Name of the woreda	----- ----		
006	Code of the Keble	----- ----		
007	Code of the woreda	----- ----		
008	Total population of the woreda	- ----- -- --		
009	Total population of the Keble	----- -----		
010	HEW number	----- ---		

Part-I back ground information

S.no	question	answer	code	skip
101	Sex	Male Female	1 2	
102	Age	-----		
103	What is your educational status	10+1	1	

		12+1	2	
104	What is your religion	Orthodox Christian Muslim Protestant Others(specify) -----	1 2 3 88	
105	What is your marital status	Single married Divorced widowed	1 2 3 4	
106	Is there any current disability	No Yes	1 2	
107	How long have you been working as HEW?	<2years 2-5years >5years	1 2 3	
108	How far is your health post from the woreda health office?	<10km >10km	1 2	

Part-II Assessment of functionality of health extension workers

S.no	question	Answer	code	skip
201	Do you give antenatal care services?	No Yes	1 2	
202	How often?	-----		
203	Days ago of last	-----		
204	Do you give curative treatments for pregnant women?	No Yes	1 → 2	206
205	For what illnesses do you give curative treatment?	Malaria hook worm anemia both other(specify) -----	1 2 3 4 88	
206	Do you give immunization service?	No Yes	1 → 2	210
207	How often?	-----		
208	Days ago of last?	-----		
209	For whom do you give immunization service?	Children Mother Both Other(specify) -----	1 2 3 88	
210	Do you give delivery service?	No Yes	1 → 2	214
211	How often?	-----		
212	Days ago of last?	-----		
213	What kind of delivery service do you give?	clean & safe home delivery institutional delivery both Other(specify) -----	1 2 3 88	
214	Do you give post natal care	No	1 →	219

	services?	Yes	2	
215	How often?	-----		
216	Days ago of last?	-----		
217	Do you give counseling service for born mothers?	No Yes	1 2	
218	On what topic do you give counseling service for born mothers?	Essential nutrition action Family planning Treatment of anemia Both Other(specify) -----	1 2 3 4 88	
219	Do you give essential nutrition action services?	No Yes	1 → 2	223
220	How often?	-----		
221	Days ago of last?	-----		
222	Do you Demonstrate vitamin A & iron complementation?	Yes No	1 2	
223	Do you perform growth monitoring	No Yes	1 → 2	226
224	How often?	-----		
225	Days ago of last?	-----		
226	Do you treat childhood illness?	No Yes	1 → 2	229
227	How often?	-----		
228	Days ago of last?	-----		
229	Do you give family planning service?	No Yes	1 → 2	233
230	How often?	-----		
231	Days ago of last?	-----		
232	What methods of family planning services you give?	Condom OCP Dipo provera Both Other(specify) -----	1 2 3 4 88	
233	Do you give adolescent reproductive health services?	No Yes	1 → 2	237
234	How often?	-----		
235	Days ago of last?	-----		
236	What kind of adolescent reproductive health services do you give?	Sexuality Counseling HIV/AIDS counseling HTP counseling condom provision Both Other(specify) -----	1 2 3 4 5 88	
237	Do you keep the cold chain system of the vaccine	No Yes	1 → 2	240
238	How often?	-----		
239	Days ago of last?	-----		
240	Do you conduct monitoring and evaluation of community resource persons?	No Yes	1 → 2	243
241	How often?	-----		

242	Days ago of last?	-----		
243	Do you give malaria prevention and controlling services?	No Yes	1 → 2	247
244	How often?	-----		
245	Days ago of last?	-----		
246	What kind of prevention intervention you gave?	Drainage of breeding site Indoor residual spray Case detection and treatment ITN distribution Other(Specify) -----	1 2 3 4 88	
247	Do you give TB Continuation treatment?	No Yes	1 → 2	252
248	How often?	-----		
249	Days ago of last?	-----		
250	Do you trace defaulters?	No Yes	1 2	
251	Do you Follow reactions and complication of anti TB?	No Yes	1 2	
252	Do you give leprosy Continuation treatment?	No Yes	1 → 2	257
253	How often?	-----		
254	Days ago of last?	-----		
255	Do you trace defaulters?	No Yes	1 2	
256	Do you Follow reactions and complication of anti leprosy medications?	No Yes	1 2	
257	Do you give HIV/AIDS and STI related services?	No Yes	1 → 2	261
258	How often?	-----		
259	Days ago of last?	-----		
260	What kind of HIV/AIDS and STI related services do you give?	Home based care information on VCT Promoting male involvement in PMTCT Promotion of ABC Distribution of condom Other(specify) -----	1 2 3 4 5 88	
261	Do you give preventing and controlling service for rabies?	No yes	1 → 2	264
262	How often?	-----		
263	Days ago of last?	-----		
264	Did epidemic occur in the Keble?	No yes	1 → 2	268

265	Do you report epidemics	No Yes	1 2	
266	How often?	-----		
267	Days/months ago of last?	-----		
268	Do you give Hygiene and environmental sanitation services?	No Yes	1 → 2	271
269	How often?	-----		
270	Days ago of last?	-----		
271	What kind of sanitation services do you give?	Promoting latrine construction promoting garbage pit construction promoting personal hygiene promoting clean home other(specify) -----	1 2 3 4 88	
272	Do you give health education?	No Yes	1 → 2	275
273	How often?	-----		
274	Days ago of last?	-----		
275	Do you give health education for behavioral change?	No Yes	1 → 2	277
276	On what topics do you give health education for behavioral change?	On food hygiene and safety On control of venereal diseases On rodent control on health full housing other(Specify) -----	1 2 3 4 88	
277	Do you give curative services?	No Yes	1 → 2	281
278	How often?	-----		
279	Days ago of last?	-----		
280	To what diseases do you give curative service?	Diarrhea diseases Malaria Intestinal parasitosis Eye & skin infection Pneumonia of children anemia during pregnancy Other(specify) -----	1 2 3 4 5 6 88	
281	Do you give school health services?	No Yes	1 → 2	284
282	How often?	-----		
283	Days ago of last?	-----		
284	Do you conduct home visit?	No Yes	1 → 2	287
285	How often?	-----		
286	Days ago of last?	-----		
287	Do you register illnesses?	No Yes	1 → 2	290

288	How often?	-----		
289	Days ago of last?	-----		
290	Do you refer patients?	No Yes	1 → 2	293
291	How often?	-----		
292	Days ago of last?	-----		
293	Do you send report?	No Yes	1 → 2	301
294	How often?	-----		
295	Days ago of last?	-----		

Part-III Assessment of items reflecting Health institution support

A- Assessment of selection pattern

S.no	question	answer	code	skip
301	By whom are you selected?	Selection committee Do not know Forgotten Other(specify) -----	1 2 3 88	
302	Where are you recruited from?	From current service area From the woreda town From per urban centers Other(specify) -----	1 2 3 88	
303	When did you recruit?	1994 E.C 1995 E.C 1996 E.C >/=1997 E.C	1 2 3 4	

B. Assessment of Supplies

304	Do you have a health post?	No Yes	1 2	
305	Do you get drugs?	No Yes	1 2	
306	Are reading and reference materials available in your health post?	No Yes	1 2	
307	Are medical equipments available in your health post?	No Yes	1 → 2	309
308	What medical equipments are available in your health post?	Injection Dressing Delivery Others(specify) -----	1 2 3 88	
309	Do you have registration book?	No Yes	1 2	

C. Assessment of facilities and assistances given by health institution.

310	Do you have transportation facilities?	No Yes	1 2	
311	Do you have communication facilities?	No Yes	1 2	
312	Have you been supervised by supervision team?	No Yes	1 2	314
313	How, often are you supervised?	Every month Every 6 month Every year Other(specify) -----	1 2 3 88	
314	Have you been given a refresher course	No Yes	1 2	
315	Have you been given a living house?	No Yes	1 2	
316	Do you have another staff member in your health post?	No Yes	1 2	401
317	Who are they?	Only one additional HEW One additional guard Two additional guard One HEW & One guard One HEW and Two guard Other(specify) -----	1 2 3 4 5 88	

D Assessment of staffing of a health post

Part-IV Assessment of items reflecting community support

A. Assessment of community involvement in health post activities

s.no	questions	Answers	code	Skip
401	Is there a health committee in your Keble?	No Yes	1 2	403
402	Is the committee involved in planning health post activities?	No Yes	1 2	
403	Who construct the health post?	Government Community	1 2	

		Both Other(specify) -----	3 88	
404	Is the community participate in diseases prevention	No Yes	1 2	406
405	How the community participated in diseases prevention?	Cooperate during immunization Cooperate during home visit Act as a model family Other(specify) -----	1 2 3 88	

B. Assessment of service delivery approach to the community

406	Is the community utilizing the health post services?	No Yes	1 2	408
407	If yeas what services are most preferably utilized?	MCH Environmental Diseases prevention and control Health education and communication	1 2 3 4	
408	Which service delivery approach is mostly required by the community?	Curative Preventive Both	1 2 3	

Part-V Assessment of items reflecting personal related working conditions of HEWs

A. Job satisfaction and future aspiration

S.no	Questions	Answers	Code	Skip
501	Are you doing your work independently?	No Yes	1 2	
502	Are you satisfied by what you are doing?	No Yes	1 2	504
503	If no, Why not?	Lack of community support Lack of HI support Lack of self interest Lack of supplies Others(specify) -----	1 2 3 4 88	
504	Are you satisfied by your profession?	No Yes	1 2	506
505	If no Why not?	Lack of upgrading chance Lack of refresher course Lack of incentives Insufficient salary Rural working environment Other(specify) -----	1 2 3 4 5 88	
506	What is your future aspiration?	Stay as health extension worker Upgrading Moving to privet/NGO Stopping employed work Other(specify) -----	1 2 3 4 88	508 509 509 509

507	If you aspire to stay as HEW for how many years?	<4 years 4-5 years >5 years	1 2 3	
508	If you aspire to upgrade to what profession?	Nurse Environmental health technician Pharmacy technician Administrative position Diploma HEW Other(specify) -----	1 2 3 4 5 88	

B Assessment of training adequacy

509	Was the training adequate for your work?	No Partially Yes	1 2 3	
510	If not What do you think is lacking?	Theoretical training Practical training Both Other(specify) -----	1 2 3 88	

የጤና ኤክስቴንሽን ስራተኞች ስላላቸው የስራ ይዘታና በስራ ይዘታቸው ላይ ስላሉ ተጽእኖዎች የሚደረግ ጥናት
የመጠየቅ መለያ (Identification)

ተ.ቁ	ጥያቄ	መልስ	የመልስ ኮድ	ወደ. ተ.ቁ.
001	የመረጃው መሰብሰቢያ ቀን	-----ቀን/ወር/ዓ.ም		
002	የመጠይቁ ቁጥር	-----		
003	የጠያቂው ኮድ	-----		
004	የቀበሌው ስም	-----		
005	የወረዳው ስም	-----		
006	የቀበሌው ኮድ	-----		
007	የወረዳው ኮድ	-----		
008	ጠቅላላ የወረዳው ህዝብ ብዛት	-----		
009	ጠቅላላ የቀበሌው ህዝብ ብዛት	-----		
010	የጠና ኤክስቴንሽን ስራተኛዎ መለያ ቁጥር	-----		

ተ.ቁ	ጥያቄ	መልስ	የመልስ ኮድ	ወደ. ተ.ቁ.
101	ፆታ	ወንድ ሴት	1 2	
102	እድሜዎ ስንት ነው?	-----		
103	የት/ት ደረጃዎ ምንድን ነው?	10+1 10+2 ሌላ(ይገለጽ)	1 2 88	
104	ሀይማኖትዎ ምንድን ነው?	ኦርቶዶክስ ክርስትያን እስልምና ፕሮቴስታንት ሌላ(ይገለጽ)	1 2 3 88	
105	የትዳር ሁኔታዎ እንዴት ነው?	ፈጽሞ ያላገባ ያገባ የተፋታ ባል የሞተባት	1 2 3 4	
106	በአሁኑ ወቅት የጤና ችግር አለብዎ?	የለብኝም አለብኝ	1 2	
107	ስራ ከተመደቡ ጀምሮ በጤና			

	ኤክስፔንሽን ሰራተኝነት ለምን ያህል ጊዜ አገልግለዋል?	-----		
108	ጤና ኤላም ከወረዳው ጤና ቢሮ ምን ያህል ይርቃል?	ከ10 ኪ.ሜ በታች ከ10 ኪ.ሜ በላይ	1 2	

ክፍል
አንድ
-
መሰረ

ታዊ መረጃ (background information)

ክፍል ሁለት የጤና ኤክስፔንሽን ሰራተኞች የስራ ይዘታ

ተ.ቁ	ጥያቄ	መልስ	የመልስ ኮድ	ወደ ተ.ቁ
201	የቅድመ ወሊድ ህክምና አገልግሎት ይሰጣሉን?	አልሰጥም እሰጣለሁ	1 → 2	204
202	ባለፈው ወር ስንት ጊዜ የቅድመ ወሊድ ህክምና አገልግሎት ሰጡ ?	-----		
203	የመጨረሻውን የቅድመ ወሊድ ህክምና አገልግሎት ከስንት ጊዜ በፊት ሰጡ?	-----		
204	ለነፍስ ጡር ሴቶች የፈውስ ህክምና አገልግሎት ይሰጣሉን?	አልሰጥም እሰጣለሁ	1 → 2	208
205	ባለፈው ወር ስንት ጊዜ ለነፍስ ጡር ሴቶች የፈውስ ህክምና አገልግሎት ሰጡ?	-----		
206	የመጨረሻውን የነፍስ ጡር ሴቶች የፈውስ ህክምና አገልግሎት ከስንት ጊዜ በፊት ሰጡ?	-----		
207	ለምን አይነት የነፍስ ጡር በሽታዎች የፈውስ ህክምና አገልግሎት ይሰጣሉ?	ለወባ በሽታ ለመንጠቆ ትል ለደም ማነስ ለሁሉም ሌላ(ይገለጽ)	1 2 3 4 88	
208	የክትባት አገልግሎት ይሰጣሉ?	አልሰጥም እሰጣለሁ	1 → 2	212
209	ባለፈው ወር ስንት ጊዜ የክትባት አገልግሎት ሰጡ?	-----		
210	የመጨረሻውን የክትባት አገልግሎት ከስንት ጊዜ በፊት ሰጡ?	-----		
211	የክትባት አገልግሎቱን ለማንደሰጣሉ?	ለህጻናት ለእናቶች ለሁሉም ሌላ(ይገለጽ)	1 2 3 88	

		--		
212	የወሊድ አገልግሎት ይሰጣሉን?		አልሰጥም አሰጣለሁ	1 2 → 216
213	ባለፈው ወር ስንት ጊዜ የወሊድ አገልግሎት ሰጡ?			
214	የመጨረሻውን የወሊድ አገልግሎት ክስንት ጊዜ በፊት ሰጡ?			
215	የትኛውን አይነት የወሊድ አገልግሎት ይሰጣሉ?	ንጽህና እና ጥንቃቄ ያለው የቤት ውስጥ ወሊድ የጤና ድርጅት ወሊድ ሁለቱንም ሌላ (ይገለጽ)		1 2 3 88
216	ድህረ ወሊድ አገልግሎት ይሰጣሉ?		አልሰጥም አሰጣለሁ	1 2
217	ባለፈው ወር ስንት ጊዜ ድህረ ወሊድ አገልግሎት ሰጡ?			
218	የመጨረሻውን ድህረ ወሊድ አገልግሎት ክስንት ጊዜ በፊት ሰጡ?			
219	ለወለዱ እናቶች የምክር አገልግሎት ይሰጣሉን?		አልሰጥም አሰጣለሁ	1 2
220	ባለፈው ወር ስንት ጊዜ ለወለዱ እናቶች የምክር አገልግሎት ሰጡ?			
221	የመጨረሻውን የምክር አገልግሎት ክስንት ጊዜ በፊት ሰጡ?			
222	በምን ርዕስ ላይ ለወለዱ እናቶች የምክር አገልግሎት ይሰጣሉ?	በተፈላጊ የአመጋገብ ስርአት በቤተሰብ ምጣኔ በደም ማነስ ህክምና ሌላ (ይገለጽ)		1 → 223 2 3 88
223	ስለተፈላጊ የአመጋገብ ስርአት የጤና አገልግሎት ይሰጣሉን?		አልሰጥም አሰጣለሁ	1 → 229 2
224	ባለፈው ወር ስንት ጊዜ ስለተፈላጊ የአመጋገብ ስርአት የጤና አገልግሎት ሰጡ?			
225	የመጨረሻውን የአመጋገብ ስርአት የጤና አገልግሎት ክስንት ጊዜ በፊት ሰጡ?			
226	የቫይታሚን ኤን እና ብረትን የምግብ ይዘት ውህደት በሙከራ ያሳያሉን?		አላሳይም አሳያለሁ	1 2
227	ባለፈው ወር የቫይታሚን ኤን እና ብረትን የምግብ ይዘት ውህደት በሙከራ ስንት ጊዜ አሳዩ?			
228	የመጨረሻውን የቫይታሚን ኤን እና ብረትን የምግብ ይዘት ውህደት በሙከራ ክስንት ጊዜ በፊት አሳዩ?			
229	የህጻናት የእድገት ክትትል ያደርጋሉን?		አላደርግም አደርጋለሁ	1 → 232 2
230	ባለፈው ወር ስንት ጊዜ የህጻናት የእድገት ክትትል አደረጉ?			
231	የመጨረሻውን የህጻናት የእድገት ክትትል ክስንት ጊዜ በፊት አደረጉ?			
232	ለህጻናት በሽታ የህክምና አገልግሎት ይሰጣሉን?		አልሰጥም አሰጣለሁ	1 → 236 2
233	ባለፈው ወር ስንት ጊዜ ለህጻናት በሽታ የህክምና አገልግሎት ሰጡ?			
234	የመጨረሻውን የህጻናት በሽታ			

	የህክምና አገልግሎት ከስንት ጊዜ በፊት ሰጡ?	-----		
235	የተቀናጀ የእናቶችና ህጻናትን በሽታ የህክምና መመሪያን ይጠቀማሉ ?	-----	አልጠቀምም እጠቀማለሁ	1 2
236	የቤተሰብ ምጣኔ አገልግሎት ይሰጣሉን	-----	አልሰጥም እሰጣለሁ	1 → 2
237	ባለፈው ወር ስንት ጊዜ የቤተሰብ ምጣኔ አገልግሎት ሰጡ?	-----		
238	የመጨረሻውን የቤተሰብ ምጣኔ አገልግሎት ከስንት ጊዜ በፊት ሰጡ?	-----		
239	ምንድነት የቤተሰብ ምጣኔ አገልግሎት ዘዴ(ዎችን) ይሰጣሉ?	-----	የኮንዶም የሚዋጥ የእርግዝና መከላከያ እንክብል ዲፖ ፕሮቬራን ሌላ(ይገለጽ)	1 2 3 88
240	ለወጣቶች የስነተዋልዶ ህክምና አገልግሎት ይሰጣሉ?	-----	አልሰጥም እሰጣለሁ	1 → 2
241	ባለፈው ወር ስንት ጊዜ ለወጣቶች የስነተዋልዶ ህክምና አገልግሎት ሰጡ	-----		
242	የመጨረሻውን የስነተዋልዶ ህክምና አገልግሎት ከስንት ጊዜ በፊት ሰጡ?	-----		
243	ምን ድይነት የስነተዋልዶ ህክምና አገልግሎት ይሰጣሉ?	-----	የስነተዋልዶ የህክምና ምክር የኤች.አይ.ቪ የምርመራ ምክር የጎጂ ባህላዊ ልማዶች የመከላከል ምክር የኮንዶም አቅርቦት ሁሉም ሌላ(ይገለጽ)	1 2 3 4 5 88
244	የክትባት መድሀኒቶችን ቀዝቃዛ ሰንሰለት ይከታተላሉ?	-----	አልከታተልም እከታተላለሁ	1 → 2
245	ባለፈው ወር ስንት ጊዜ የክትባት መድሀኒቶችን ቀዝቃዛ ሰንሰለት ተከተሉ?	-----		
246	የመጨረሻውን የክትባት መድሀኒቶችን ቀዝቃዛ ሰንሰለት ከስንት ጊዜ በፊት ተከተሉ?	-----		
247	ለሀብ/ቡ አርአያ የሆኑ የሀ/ብ ክፍሎችን ክትትልና ግምገማ ያደርጋሉን?	-----	አላደርግም አደርጋለሁ	1 → 2
248	ባለፈው ወር ስንት ጊዜ ክትትልና ግምገማ አደረጉ?	-----		
249	የመጨረሻውን ክትትልና ግምገማ ከስንት ጊዜ በፊት አደረጉ?	-----		
250	የወባ በሽታን የመከላከልና ቁጥጥር አገልግሎት ይሰጣሉን?	-----	አልሰጥም እሰጣለሁ	1 → 2
251	ባለፈው ወር ስንት ጊዜ የመከላከልና ቁጥጥር አገልግሎት ሰጡ?	-----		
252	የመጨረሻውን የመከላከልና ቁጥጥር አገልግሎት ከስንት ጊዜ በፊት ሰጡ	-----		
253	ምን ድይነት የወባ በሽታ መከላከልና ቁጥጥር አገልግሎት ይሰጣሉ?	-----	የወባ ትንኝ መራቢያ ቦታን የማፍሰስ የቤት ውስጥ ጸረ-ወባ ትንኝ የመርጭት የወባ በሽታዎችን መርምሮ መለየትና ማከም የወባ ትንኝ መከላከያ አገልግሎት ሌላ(ይገለጽ)--	1 2 3 4 88
254	የቲቪ ተከታይ የህክምና አገልግሎትን ይሰጣሉን?(continuation treatment)	-----	አልሰጥም እሰጣለሁ	1 → 2
255	ባለፈው ወር ስንት ጊዜ ተከታይ	-----		

	የህክምና አገልግሎትን ሰጡ?	-----		
256	የመጨረሻውን ተከታይ የህክምና አገልግሎት ከስንት ጊዜ በፊት ሰጡ?	-----		
257	የቲቪ ህክምና መድሀኒት ጀምረው ያቀረጡትን ሰዎች ያፈላልጋሉ?	አላፈላልግም አፈላልጋለሁ	1 2	
258	የቲቪ ህክምና መድሀኒት ቶችን ተጓዳኝ ችግሮች ይከታተላሉ?	አልከታተልም እከታተላለሁ	1 2	
259	የሊፕሮሲ ተከታይ ህክምና አገልግሎትን ይሰጣሉ?	አልሰጥም እሰጣለሁ	1 2	264
260	ባለፈው ወር ስንት ጊዜ ተከታይ የህክምና አገልግሎትን ሰጡ?	-----		
261	የመጨረሻውን ተከታይ የህክምና አገልግሎት ከስንት ጊዜ በፊት ሰጡ?	-----		
262	የሊፕሮሲ ህክምና መድሀኒት ጀምረው ያቀረጡትን ሰዎች ያፈላልጋሉ?	አላፈላልግም አፈላልጋለሁ	1 2	
263	የሊፕሮሲ ህክምና መድሀኒቶችን ተጓዳኝ ችግሮች ይከታተላሉ?	አልከታተልም እከታተላለሁ	1 2	
264	ለኤች.አይ.ቪ/ኤድስና ሌሎች አባላዘር በሽታዎች የድጋፍ አገልግሎት ይሰጣሉ	አልሰጥም እሰጣለሁ	1 2	268
265	ባለፈው ወር ለኤች.አይ.ቪ/ኤድስና ሌሎች አባላዘር በሽታዎች ስንት ጊዜ የድጋፍ አገልግሎት ሰጡ?	-----		
266	የመጨረሻውን የድጋፍ አገልግሎት ከስንት ጊዜ በፊት ሰጡ?	-----		
267	ምን አይነት የድጋፍ አገልግሎት ይሰጣሉ?	የቤት ውስጥ እንክብካቤ በፍቃደኝነት ላይ የተመረከዘ የደም ምርመራን የማበረታታት ከእናት ወደልጅ እንዳይተላለፍ የወንዶችን ተሳትፎ ማበረታታት የኤ.ቢ.ሲን መከላከያ ስልት ማበረታታት ኮንዶምን ማሰራጨት ሌላ (ይገለጽ)	1 2 3 4 5 88	
268	የውሻ በሽታን(Rabies) የመከላከልና ቁጥጥር አገልግሎት ይሰጣሉ?	አልሰጥም እሰጣለሁ	1 2	
269	ባለፈው ወር ለውሻ በሽታ(Rabies) ስንት ጊዜ የመከላከልና ቁጥጥር አገልግሎት ሰጡ?	-----		
270	የመጨረሻውን የመከላከልና ቁጥጥር አገልግሎት ከስንት ጊዜ በፊት ሰጡ?	-----		
271	በቀበሌው ውስጥ በወረርሽኝ መልክ በሽታ ተከስቶ ያውቃል?	አያውቅም ያውቃል	1 2	275
272	ወረርሽኝ ሲከሰት ለሚመለከተው ክፍል ሪፖርት ያደርጋሉ?	አላደርግም አደርጋለሁ	1 2	
273	ባለፈው ወር ስንት ጊዜ ሪፖርት አደረጉ?	-----		
274	የመጨረሻውን ሪፖርት ከስንት ጊዜ በፊት አደረጉ?	-----		
275	የግልና የአካባቢ ንጽህና አገልግሎት ይሰጣሉ?	አልሰጥም እሰጣለሁ	1 2	279
276	ባለፈው ወር ስንት ጊዜ የግልና የአካባቢ ንጽህና አገልግሎት ሰጡ?	-----		
277	የመጨረሻውን የግልና የአካባቢ ንጽህና አገልግሎት ከስንት ጊዜ በፊት ሰጡ	-----		
278	ምን አይነት የግልና የአካባቢ ንጽህና አገልግሎት ይሰጣሉ?	የመጸዳጃ ቤት ግንባታን የማበረታታት የደረቅ ቆሻሻ ማጠራቀሚያ ስራን ማበረታታት የግል ንጽህናን ማበረታታት	1 2	

		የንጹህ ቤት አያያዝ ዘዴን ማበረታታት ሌላ (ይገለጽ)	3 4 88	
279	የጤና ትምህርት አገልግሎት ይሰጣል?	አልሰጥም አሰጣለሁ	1 → 2	282
280	ባለፈው ወር ስንት ጊዜ የጤና ትምህርት አገልግሎት ሰጡ?	-----		
281	የመጨረሻውን የጤና ትምህርት አገልግሎት ከስንት ጊዜ በፊት ሰጡ?	-----		
282	በህ/ቡ ዘንድ የባህሪ ለውጥ ለማምጣት የሚያስችል የጤና ት/ት ይሰጣል?	አልሰጥም አሰጣለሁ	1 → 2	286
283	ባለፈው ወር ስንት ጊዜ ሰጡ?	-----		
284	የመጨረሻውን ከስንት ጊዜ በፊት ሰጡ?	-----		
285	በምን ርዕስ ላይ የባህሪ ለውጥ ለማምጣት የጤና ት/ቱን ይሰጣል?	በምግብ የንጹህና እና ጥንቃቄ አያያዝ በአባላዘር በሽታዎች እና ተላላፊ በሽታዎች ቁጥጥር በቆርጣሚ ነፍሳት ቁጥጥር በጤናማ ቤት አያያዝ በአካባቢ ንጽህና ቁጥጥር በእናቶችና ህጻናት ጤና አጠባበቅ ሌላ(ይገለጽ)	1 2 3 4 5 6 88	
286	የፈውስ ህክምና አገልግሎት ይሰጣል? (curative treatment)	አልሰጥም አሰጣለሁ	1 → 2	290
287	ባለፈው ወር ስንት ጊዜ የፈውስ ህክምና አገልግሎት ሰጡ?	-----		
288	የመጨረሻውን የፈውስ ህክምና አገልግሎት ከስንት ጊዜ በፊት ሰጡ	-----		
289	ለምን አይነት በሽታ(ዎች)የፈውስ ህክምና አገልግሎት ይሰጣል?	ለተቅማጥ ለወባ በሽታ ለአንጀት ትላትል ለአይንና ለቆዳ በሽታዎች ለህፃናት ሳምባምች በሽታ ለደምማነስ በሽታ ሌላ (ይገለጽ)	1 2 3 4 5 6 88	
290	የት/ት ቤት ጤና አገልግሎት ይሰጣል?	አልሰጥም አሰጣለሁ	1 → 2	293
291	ባለፈው ወር ስንት ጊዜ የት/ት ቤት ጤና አገልግሎት ሰጡ?	-----		
292	የመጨረሻውን የት/ት ቤት ጤና አገልግሎት ከስንት ጊዜ በፊት ሰጡ	-----		
293	የቤት ለቤት ጉብኝት ያደርጋል?	አላደርግም አደርጋለሁ	1 → 2	296
294	ባለፈው ወር ስንት ጊዜ የቤት ለቤት ጉብኝት አደረጉ?	-----		
295	የመጨረሻውን የቤት ለቤት ጉብኝት ከስንት ጊዜ በፊት አደረጉ?	-----		
296	የበሽታ ምዝገባን ያደረጋል? (illness registration)	አላደርግም አደርጋለሁ	1 → 2	299
297	ባለፈው ወር ስንት ጊዜ የበሽታ ምዝገባን አደረጉ?	-----		
298	የመጨረሻውን የበሽታ ምዝገባ			

	ከስንት ጊዜ በፊት አደረጉ ?	-----		
299	በሽተኞችን ለተሻለ ህክምና አገልግሎት ይልካሉ?	አልክም እልካለሁ	1 → 2	210 2
2100	ባለፈው ወር ስንት ጊዜ በሽተኞችን ለተሻለ ህክምና አገልግሎት ላኩ?	-----		
2101	የመጨረሻውን በሽተኛ ለተሻለ ህክምና አገልግሎት ከስንት ጊዜ በፊት ላኩ?	-----		
2102	ሪፖርት ለሚመለከተለው አካል ይልካሉ?	አልክም እልካለሁ	1 → 2	301
2103	ባለፈው ወር ስንት ጊዜ ሪፖርት ላኩ?	-----		
2104	የመጨረሻውን ሪፖርት ከስንት ጊዜ በፊት ላኩ?	-----		

ክፍል-ሶስት :-የጤና ድርጅቶች ድጋፍ ዳሠሣ
ሀ- የጤና ኤክስቴንሽን ሠራተኞች አመራረጥ ሁኔታ ዳሠሣ

ተቁ	ጥያቄ	መልስ	የመልስ ኮድ	ወደ. ተ.ቁ
301	ለጤና ኤክስቴንሽን ሠራተኛ የተመረጡት በማን ነው ?	በምርጫ ኮሚቴው አላውቀውም እረጎቸዋለሁ ሌላ(ይገለጽ)	1 2 3 88	
302	ከየት ነው የተመረጡት?	ከምሠራብት ቀበሌ ከወረዳው ከተማ ከአቅራቢያ ቀበሌ ሌላ(ይገለጽ)	1 2 3 88	
303	መቼ ነው የተመረጡት?	በ1994ዓ.ም በ1995ዓ.ም በ1996ዓ.ም በ1997ዓ.ም	1 2 3 4	

ለ. ለጤና ኤክስቴንሽን ሠራተኞች ስራ አስፈላጊ የሆኑ አቅርቦቶች ዳሰሳ

304	ጤና ኬላ አለዎት ?	የለኝም አለኝ	1 2	
305	ጤና ኬላውን ያስገነባው ማን ነው?	መንግስት ሀ/ቡ ሁለቱም ሌላ(ይገለጽ)	1 2 3 88	
306	የመድሀኒት አቅርቦት ይደረግልዎታል?	አይደረግልኝም ይደረግልኛል	1 2	
307	ባለፈው ወር ስንት ጊዜ ሰጡ?	-----		
308	የመጨረሻውን ከስንት ጊዜ በፊት ሰጡ?	-----		
309	ምን አይነት መድሀኒት አቅርቦት ይደረግልዎታል?	የእርግዝና መከላከያ የሰውነት መሟሽት-መከላከያ የክትባት የፀረ ባክቴሪያ የፀረ አንጅት ትላትል -የወባ ሌላ(ይገለጽ)	1 2 3 4 5 6 88	
310	የማጣቀሻ መፅሀፎችና ሌሎች	አይገኙም	1	

	የሚነበቡ ፀ-ሁፎች በጤና ክላው ይገኛሉ?	ይገኛሉ	2	
311	የህክምና መሣሪያዎች በጤና ክላው ይገኛሉ ?	አይገኙም ይገኛሉ	1 2	313
312	ምንድን የህክምና መሣሪያዎች በጤና ክላው ይገኛሉ?	የመርፌ መስጫ የቁስል ማሽን የወሊድ አገልግሎት መስጫ ሌላ (ይገለጽ)	1 2 3 88	
313	የበሽታ ምዝገባን የሚያካሄድበት መዝገብ አለዎት?	የለኝም አለኝ	1 2	
314	የትራንስፖርት አገልግሎት አለዎት?	የለኝም አለኝ	1 2	
315	የመገናኛ አገልግሎት አለዎት?	የለኝም አለኝ	1 2	
316	በጉብኝት ብድን ድጋፍ ሠጪ ጉብኝት ይደረግለዎታል?	አይደረግልኝም ይደረግልኛል	1 2	318
317	በየስንት ጊዜው ድጋፍ ሠጪ ጉብኝት ይደረግለዎታል?	በየወሩ በየ6ወሩ በየአመቱ ሌላ(ይገለጽ)	1 2 3 88	
318	የማጠናከሪያ ስልጠና ተሰጠዎታል?	አልተሰጠኝም ተሰጠኛል	1 2	
319	የመኖርያ ቤት ተሰጥዎታል?	አልተሰጠኝም ተሰጠኛል	1 2	

ሐ የጤና ክላ ስታፍ አደረጃጀት ዳህሣ

320	በጤና ክላው ሌላ ሠራተኛ አለ?	የለም አለ	1 2	401
321	በጤና ክላው ውስጥ ሌላ የምን ሠራተኛ (ሰራተኞች)ይገኛል(ሉ)?	አንድ ተጨማሪ ጤና ኤክስፔንሽን ሠራተኛ አንድ ተጨማሪ ዘበኛ ሁለት ተጨማሪ ዘበኛ አንድ ጤና ኤክስፔንሽንና አንድ ዘበኛ አንድ ጤና ኤክስፔንሽንና ሁለት ዘበኛ -ሌላ (ይገለጹ)	1 2 3 4 5 88	

**ክፍል አራት :- የህ/ብ ድጋፍ ዳህሣ
ሀ.በጤና ክላ ተግባራት የህ/ብ ተሳትፎ ዳህሣ**

ተ.ቁ	ጥያቄ	መልስ	የመልስ ኮድ	ወደ ተ.ቁ
401	በቀበሌው ውስጥ የጤና ኮሚቴ አለ?	የለም አለ	1 2	403
402	የጤና ኮሚቴው የጤና ክላው እቅድ ሢወጣ ይሳተፋል ?	አይሳተፍም ይሳተፋል	1 2	
404	ህ/ብ በበሽታ መካከል ስራዎች ላይሳተፍሉ ?	አይሳተፍም ይሳተፍል	1 2	406
405	እንዴት ነው ህ/ብ በበሽታን በመከላከል ስራዎች የሚሳተፍ ?	በክትባት ወቅት በመተባበር በቤት ጉብኝት ወቅት በመተባበር እንደ አርያ ሆኖ በመስራት ሌላ(ይገለጽ)	1 2 3 88	

ለ. የጤና አገልግሎትን ለህ/ብ የአሰጣጥ አቀራረብ ዳህሣ

406	የጤና ክላ አገልግሎትን ህ/ብ ይጠቀማል?	አይጠቀምም ይጠቀማል	1 2	408
407	የትኛውን የጤና ክላ ጤና አገልግሎት	የእናቶችና የህፃናትን የአካባቢ ንፅህናን	1 2	

	ሀ/ቡ በይበልጥ ይጠቀማል ?	የበሽታ መከላከልና ቁጥጥርን የጤና ት/ትና ግንኙነትን -ሌላ(ይገለጽ)	3 4 88	
408	የትኛው የጤና አገልግሎት አሰጣጥ አቀራረብ በሀ/ቡ ዘንድ በይበልጥ ይፈለጋል ?	የፊውስ ህክምና የመከላከልህክምና ሁለቱንም	1 2 3	

ክፍል- አምስት የጤና ኤክስቴንሽን ሠራተኞችን ግላዊ የአሠሪር ሁኔታ ዳሠሣ ሀ. የስራ እርካታ እና የወደፊት ፍላጎት ዳሠሣ

ተ.ቁ	ጥያቄ	መልስ	የመልስ ኮዱ	ወደ. ተ.ቁ
501	ስራዎን እራስዎን ችለው ይሠራሉ ?	አልሰራም እሰራለሁ	1 2	
502	በሚሠሩት ስራ እርካታን ያገኛሉ?	አላገኛም አገኛለሁ	1 → 2	504
503	ለምን እርካታን አያገኙም ?	የሀ/ብ ድጋፍ አለመኖር የጤና ድርጅት ድጋፍ አለመኖር የስራ ፍላጎት አለመኖር የአቀርቦት አለመኖር ሌላ (ይገለጽ)	1 2 2 4 88	
504	በሙያዎ ይረካሉ ?	አረካም አረካለሁ	1 → 2	506
505	ለምን በሙያዎ እረካታ አያገኙም ?	የት/ት እድል አለመኖር የማጠናከሪያ ት/ት አለመኖር የማበራታቻ ክፍያ አለመኖር የደመወዝ ብቁ አለመሆን ሌላ(ይገለጽ)	1 2 3 4 88	
506	የወደፊቱ ፍላጎትዎ ምንድን ነው?	የጤና ኤክስቴንሽን ሠራተኛ ሆኖ መቆየት ሙያዎን ማሻሻል ወደ ግል/ መነግስታዊ ያልሆኑ ድርጅቶች መሄድ የቅጥር ስራን ማቆም ሌላ (ይገለጽ)	1 2 → 3 → 4 → 88 →	508 509 509 509
507	የጤና ኤክስቴንሽን ሠራተኛ ሆኖ የመቆየት ፍላጎት ካለዎት ለምን ያህል ዓመት ?	ከአራት አመት ያልበለጠ ከአራት -አምስት አመት ከአምስት አመት በላይ	1 2 3	
508	የሙያ ማሻሻያ ፍላጎት ካለዎት ወደ ምን ሙያ ማሻሻል ይፈልጋሉ ?	ወደ ነርስነት ወደ አካባቢ ጤና ተቆጣጣሪነት ወደፍርማሲ ቴክኒሻያንነት ወደ አስተዳደር ሠራተኛነት ሌላ(ይገለጽ)	1 2 3 4 88	

ለ .የትሬንግ ዳሠሣ

509		አይደለም	1 → 2 →	510 510
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	የሙያ ስልጠናው ለስራዎ በቂ ነው ?	በከፊል አዎ	3	
510	ምን ይገለጻል ብለው ያስባሉ ?	የንድፍ ሀሣብ ስልጠናው የተግባር ስልጠናው ሁለቱም ሌላ(ይገለጹ) -----	1 2 3 88	

Questionnaire For the case control study (Interview checklist / individual questionnaire)

Identification

s.no	question	answer	code
001	Date of data collection	-----dd/mm/yy	
002	Questionnaire number	-----	
003	Code of data collator	-----	
004	Name of the Keble	-----	
005	Name of the woreda	-----	
006	Code of the Keble	-----	
007	Code of the woreda	-----	
008	Total population of the woreda	- ----- -	
009	Total population of the Keble	-----	
010	HEW number	-----	

Back ground information

S.no	question	answer	code
101	Sex	Male Female	1 2
102	Age	-----	
103	What is your educational status	10+1 12+1	1 2
104	What is your religion	Orthodox Christian Muslim Protestant Others(specify) -----	1 2 3 88
105	What is your marital status	Single married Divorced widowed	1 2 3 4
106	Is there any current disability	No Yes	1 2
107	How long have you been working as HEW?	<2years 2-5years >5years	1 2 3

S.no	Questions	Answers	
1	Have you ever been given a refresher course? (If the answer is no jump to question number two)	no	0
		yes	1
	How often? How many times till now?		
2	Have you ever been supervised by a health center supervisor team? (If the answer is no jump to question number three)	no	0
		yes	1
3	Have you ever been supervised by the woreda health office supervisory team?	no	0
		yes	1
4	Have you ever been supplied with reference materials? (If the answer is no jump to question number five)	no	0
		yes	1
	What reference materials are available in your health post?		
5	Have you ever been supplied with the following drugs? (If the answer is no jump to question number six)	no	0
		yes	1
	Contraceptive	no	0
		yes	1
	Oral rehydration salt	no	0
		yes	1
	Vaccine	no	0
		yes	1
	Iron sulfate	no	0
		yes	1
6	Have you ever been supplied with the following medical equipments (If the answer is no jump to question number seven)	no	0
		yes	1
	1. Syringe with needle	no	0
		yes	1
	BP apparatus with stethoscope	no	0
		yes	1
	Baby weight scale	no	0
		yes	1
Strature	no	0	

		yes	1
	Thermometer	no	0
		yes	1
	Adult weight scale	no	0
		yes	1
	First aid kits	no	0
		yes	1
	Delivery set	no	0
		yes	1
	Delivery couch	no	0
		yes	1
	Examination bed	no	0
		yes	1
	Refrigerator	no	0
		yes	1
	fetoscope	no	0
		yes	1
7	Have you ever been supplied with the following stationery materials	no	0
		yes	1
	Registration book	no	0
		yes	1
	Report formats	no	0
		yes	1
	Pen & pencil	no	0
		yes	1
	Graph papers	no	0
		yes	1
	Markers	no	0
		yes	1
	White paper	no	0
		yes	1
8	Have you staffed with two HEWs and two guards?	no	0
		yes	1
9	Have you been given a living house?	no	0
		yes	1
10	Do you have completely constructed health post?	no	0
		yes	1
11	How far is your health post from the health center?	</=10km	0
		>10km	1
12	How far is your health post from the woreda health office?	</=10km	0
		>10km	1
13	Have you been selected by selection committee for HEW?	no	0
		yes	1
14	Where are you selected from?	Current service area	1
		Near by	

		Keble 2 Other 3
15	What is your future aspiration?	Stay as HEW-----1 Upgrading-2 Other--3
16	If you aspire to stay as HEW for how many year/s?	-----